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REFUSE COLLECTION AND DISPOSAL. AN ANNOTATED BIBLIOGRAPHY 1960-1961

Ralph J. Black, et al

National Center for Urban and Industrial Health
Cincinnati, Ohio

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REFUSE COLLECTION AND DISPOSAL

An Annotated Bibliography 1960-1961

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REFUSE COLLECTION AND DISPOSAL

An Annotated Bibliography 1960-1961

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I

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PREFACE

This supplement covers the period 1960–61, and is arranged in sections which correspond to the various administrative and operational phases of the broad field of refuse handling. As in recent supplements, the references are annotated, periodical and other publications cited are listed, and an author index is provided for increased usability. In addition, a place index is provided as a further aid in locating specific information.

A 75 percent increase in the number of items listed as compared to Supplement D, indicates a growing interest in this field. Since this publication is designed to facilitate the exchange of information in solid wastes technology, which forms the basis for improving practices, suggestions to improve its usefulness are welcomed.

This supplement was prepared with the aid of Mr. William G. Henderson, Student Assistant.

Arthur H. Neill

ARTHUR H. NEILL, *Chief*
Special Engineering Services Branch.

A. REGULATIONS (including Laws and Ordinances)

Air Pollution Control Association, Legal Committee

1. Abstracts of Legal Decisions Relating to Air Pollution. *Journal of the Air Pollution Control Association*, 11:10:477, October 1961.

The following decisions relate to refuse disposal: *City of Birmingham* v. *Scogin*, 115 So. 2d 505 (Ala. 1959). In a suit against the city to enjoin the operation of a garbage dump, the court held that a nuisance created by negligence in the performance of a lawful function could be abated and that the plaintiffs were entitled to an injunction against the unreasonable creation of obnoxious odors and fumes.
Department of Health v. *Roselle*, 169 A. 2d 153 (Sup. Ct. N.J., 1961). The department of health made a motion for an order holding defendants in contempt for failure to comply with a final consent judgment ordering them to cease violating the New Jersey Air Pollution Control Code on premises which they operated as a refuse dump. The court held that the restraint imposed by the prior judgment was too vague to sustain a finding of violation on the record. The court noted that the air pollution code did not require either an incinerator or sanitary landfill for refuse disposal.

2. Abstracts of Legal Decisions Relating to Air Pollution. *Journal of the Air Pollution Control Association*, 11:11:535, November 1961.

The following decision relates to refuse disposal: *Sohns* v. *Jensen*, 11 Wisc. 2d 449, 105 N.W. 2d 818 (1960). Action was brought to enjoin the operation of an auto wrecking yard in violation of the zoning ordinance and to abate the nuisance created by the burning of junked automobiles. The court held that since the defendant was not in business before enactment of the zoning ordinance, he was not entitled to continue this operation as a nonconforming use.

Anonymous

3. Disposal Makes Variety of Local Ordinances. *Refuse Removal Journal*, 4:12:20, December 1961.

A list of local ordinances regulating the responsibilities of those who use disposal sites, salvage operations, the separation of refuse, the collection of hazardous refuse, the disposal of dead animals, and the operation of private disposal sites.

4. New Sanitation By-Laws for Ontario Township. *Refuse Removal Journal*, 3:1:18, January 1960.

Bylaws for the township of Etobicoke provide for and regulate the handling and collection of garbage, rubbish, ashes, other waste material, and the cleaning of streets.

5. Ordinances Show Variety. *Refuse Removal Journal*, 3:7:25, July 1960.

A discussion of city ordinances regarding the size, care, and maintenance of refuse containers and persons responsible for providing these receptacles.

6. Reversed Decision Vital to Private Contractors. *Refuse Removal Journal*, 4:5:8, May 1961.

The decision of the U.S. District Court to exclude employees of refuse removal contractors from the benefits of the Fair Labor Standards Act has been reversed by the Court of Appeals. The case is to go before the Supreme Court in the near future.

7. Stiff Fines for Litterbugs in Philadelphia. *The American City*, 75:12:20, December 1960.

A new ordinance authorizing fines up to $50 or 30 days imprisonment for littering has gone into effect in Philadelphia, Pa.

8. Street Cleaning Laws Show Wide Variations. *Refuse Removal Journal*, 3:1:25, January 1960.

Discusses street-cleaning laws covering the disposal of dead animals and abandoned automobiles, the leaking of refuse from overloaded or defective hauling equipment, the problem of leaves, and weed control.

9. Street Cleaning Laws Show Wide Variations. *Refuse Removal Journal*, 3:2:14, February 1960.

Street-cleaning laws of various cities include ordinances governing sidewalk cleaning and snow clearing.

10. Street Cleaning Laws Show Wide Variations. *Refuse Removal Journal*, 3:4:21, April 1960.

Describes ordinances prohibiting the throwing of refuse into gutters and on sidewalks and regulating the distribution of handbills.

Ostroff, Isidor

11. District Court Opinion Vital to Refuse Haulers. *Refuse Removal Journal*, 3:6:6, June 1960.

Discusses details and consequences of a recent U.S. District Court decision to exclude employees of refuse removal contractors from the benefits of the Fair Labor Standards Act.

12. KNOW THE LAW. *Refuse Removal Journal*, 4:6:10, June 1961.

Further discussion and explanation of the Fair Labor Standards Act as it applies to the private refuse hauler and his employees.

B. FINANCES (including Costs, Fees, Taxes, etc.)

Anonymous

13. CALIFORNIA GROUP FIGHTS HIGHWAY ACT'S TAX LAW. *Refuse Removal Journal*, 3:1:10, January 1960.

The San Fernando Valley Rubbish Collectors Association is attempting to eliminate provisions of the Federal Highway Use Tax considered discriminatory against refuse haulers. Although both traverse the same streets and avenues, tax is levied on the heavy refuse collecting vehicles but not on other public service vehicles of lighter weight.

14. CALIFORNIA GROUP RENEWS PROTESTS ON HIGHWAY TAX. *Refuse Removal Journal*, 3:12:8, December 1960.

The San Fernando Valley Association is continuing its effort to change the Federal Highway Use Tax considered discriminatory against refuse haulers.

15. CHICAGO COSTS UP AS MUCH AS 456 PERCENT. *Refuse Removal Journal*, 3:5:8, May 1960.

A survey of private contractors in the Chicago area shows that wages, equipment, license fees, and insurance costs have taken a steep rise, and that an increase in the amount of refuse has necessitated the use of more expensive equipment.

16. NEW JERSEY ASSOCIATION JOINS USE TAX PROTEST. *Refuse Removal Journal*, 3:6:10, June 1960.

Two members of the New Jersey State Municipal Contractors Association have joined forces with California groups in protesting the imposition of the Federal Highway Use Tax.

17. REFUSE COLLECTION CHARGES IN VIRGINIA. *The American City*, 76:4:36, April 1961.

Presents results of a questionnaire sent to 48 Virginia communities with populations of 5,000 or more. Includes information about frequency of refuse collections and charges made for this service.

Muir, Roland E.

18. REFUSE COLLECTION AND DISPOSAL IN MINNESOTA (PART III). *Minnesota Municipalities*, 45:7:196, July 1960.

A review of the methods used by Minnesota municipalities to finance their refuse collection and disposal costs. Expenses are paid from general revenues, special service charges, or a combination of both. Describes the methods used for the billing of service charges. Also gives the conclusions drawn from the entire survey of refuse collection and disposal techniques in the State. (See item No. 204 for part I and item No. 260 for part II.)

Rusch, Clifford

19. SANITATION COSTS CUT 31%. *Public Works*, 91:8:107, August 1960.

Cost-conscious supervision and the use of paper bags as garbage can liners have given Fredericksburg, Va., an improved refuse collection service at a lower cost. The sanitation department's expenditure of $71,000 in the 1953–54 fiscal year has been decreased to $49,000 in 1960–61, despite increased collection service, higher material costs, wage increases, the initiation of paid vacations, and the replacement of open dumps with sanitary landfills.

C. STORAGE (including Methods and Equipment)

Anonymous

20. ASHTABULA PAINTS (AND PRIZES) ITS CONTAINERS. *The Street Cleaner*, 45:3:1, March 1961.

Describes the refuse container system used in Ashtabula, Ohio. The containers provide faster pickups, a reduction in alley litter and vermin nuisance, fireproof refuse storage, and revenue for the town.

21. BETTER BINS. *Public Cleansing*, 50:4:202, April 1960.

Three improvements have been made on the standard dustbins: (1) a heavy rubber base ring to eliminate noise and protect against wear; (2) a wide flange to provide increased protection for the bottom of the bin; and (3) a two-piece bin with the lower half made of heavy gage to resist rotting and impact.

22. BETTER REFUSE STORAGE URGED TO CUT FIRE HAZARDS. *The American City*, 75:2:32, February 1960.

Fire departments across the country are participating in a program to stimulate public use of metal garbage cans, metal rubbish burners, and metal fuel cans.

23. Britons Discard Their "Dust Bins." *The American City*, 76:8:31, August 1961.

A brief discussion of refuse storage by the paper sack method in Great Britain. Paper bags are providing far superior sanitary conditions than the formerly used "dustbins."

24. Containers at U. of Wisconsin. *Refuse Removal Journal*, 4:5:15, May 1961.

Steel containers with capacities of 225 gallons provide an attractive sanitary refuse-storage system for the modern apartment buildings on the University of Wisconsin campus.

25. Dustbins Sacked? — Rubbish! *Public Cleansing*, 51:9:485, September 1961.

A comparison between the dustbin and sack refuse-storage systems. Sacks have been used advantageously in Sweden, but not all locales are suitable for this type of storage container. A table showing annual costs of the two systems is included.

26. Fact-Finding on Municipal Dustbin Schemes. *Public Cleansing*, 50:5:263, May 1960.

Results of a survey covering 44 authorities who provide a total of 2 million dustbins for refuse storage. Gives information on dustbin prices, life span, and difficulties encountered with municipal dustbin schemes.

27. Handsome Ways to Hide Trash Cans. *Popular Science*, 177:3:170, September 1960.

Presents ways in which unsightly garbage containers can be hidden by cabinets and paint. Drawings illustrate the plans.

28. Mr. Price's Paper. *Public Cleansing*, 50:1:10, January 1960.

A discussion of refuse bin provision by local authorities. Many authorities are studying the possible use of dustless refuse collection, which could be introduced with municipal bin ownership only. The Public Health Act of 1936 gives authorities the necessary power to provide residences with municipally owned bins, and under this law the community of East Ham has successfully used this type of refuse collection. The conclusion reached is that a hygienic refuse receptacle provided by local authorities would improve service.

29. Newburgh, N.Y., Hits Garbage Can Violators With "Courtesy Tickets"—Then Warnings. *The Street Cleaner*, 45:11:3, November 1961.

Describes a three-stage program being used to rid the community of garbage can violations. Offenders are first issued courtesy tickets; if the violation continues, a letter of warning is sent; and if the unsatisfactory condition is not taken care of before the third collection, the offender is sent a court summons.

30. N.J. Town Tests New Method for Residential Area. *Refuse Removal Journal*, 4:9:28, September 1961.

Montclair, N.J., is the scene of an experiment involving the use of paper bags instead of metal cans for refuse storage. The new method is patterned after similar systems already successfully employed in Sweden and England.

31. Paper Bags at the Foot of the Chute. *Public Cleansing*, 50:12:592, December 1960.

A circular refuse-collecting machine that can be used with any refuse chute installation has been developed in Sweden. The machine catches the falling refuse in 1 of the 12 paper bags which it contains, compresses it, and automatically rotates a new paper bag into position when the old one is filled. The $1,420 machine reduces refuse collection costs sufficiently to pay for its own installation in a short time.

32. Round or Square? *Public Cleansing*, 50:11:576, November 1960.

A report of a study on refuse containers, with emphasis on type and design. For dustless refuse collection, round containers were found preferable to square ones. Both fiberglass and aluminum containers were found to be light and durable. Welding proved better than riveting for the assembly of the bottom and sides. Asphalting the inside of containers was found to prevent rust formation.

33. Salford Solves the Only Snag. *Public Cleansing*, 51:1:32, January 1961.

Discusses alterations in the turntable, refuse-storage system used in multistory flats in Salford, England. A description of the original system appeared in the December 1959 issue of *Public Cleansing*.

34. Texas Contractor Lauds Use of Container System. *Refuse Removal Journal*, 3:5:14, May 1960.

A Ft. Worth, Tex., contractor finds that containerized refuse storage and collection is cleaner, more efficient, and more acceptable than any other system.

35. Three Papers at One Meeting. *Public Cleansing*, 50:2:69, February 1960.

One of the papers compares communal containers and dustbins. Large communal containers provide the best means of refuse storage because manual effort is reduced to a minimum.

36. Tulsan Invents New Motorized Refuse Container. *Refuse Removal Journal*, 4:8:24, August 1961.

A brief description of a new motorized refuse container which takes both wet and dry refuse, grinds it up, emulsifies it in a water and chemical solution, and deodorizes it. The refuse may remain in the container for a long period of time without odor or flies.

37. A Very Neat Way to Handle Trash Cans. *Sunset*, 127:4:246, October 1961.

Briefly describes a stylish way to hide backyard trash cans without making them inaccessible.

38. Work Study on Sack Collection. *Public Cleansing*, 51:4:178, April 1961.

A comparison of galvanized bin and sack refuse storage. The study reveals that a conversion from bins to sacks would be worthwhile in a backdoor collection system but impractical in a curbside collection system.

Cavanagh, Edward F., Jr.

39. Housekeeping and Fire Prevention. *Modern Sanitation and Building Maintenance*, 13:3:10, March 1961.

Stresses the necessity of good housekeeping and the maintenance of overall sanitary conditions in the prevention of fires at industrial, commercial, and institutional establishments.

Mitchell, Joseph McD.

40. A Courtesy Ticket is a Persuasive Reminder. *The American City*, 76:8:31, August 1961.

The use of courtesy tickets has brought about a remarkable change in unsatisfactory refuse storage practices by citizens in Newburgh, N.Y.

Wilton, Donald P.

41. Refuse Containers as a Source of Flies in Honolulu and Nearby Communities. *Proceedings of the Hawaiian Entomological Society*, 17:3:477, August 1961.

Report of a study undertaken in Honolulu, Hawaii, on fly production in refuse cans. The study demonstrated that twice-a-week refuse collection is effective in restricting fly production, but other measures must also be taken to eliminate the fly problem. This is particularly true in apartment house areas, where fly production was found in 38 percent of the addresses, compared to 10 percent of the single-family dwellings. Twenty-three species of flies were identified in the study.

D. COLLECTION AND DISPOSAL—General

Anonymous

42. Baltimore Chief Worked His Way From the Bottom. *Refuse Removal Journal*, 4:1:8, January 1961.

The leadership of Joseph H. McCarthy, Chief, Baltimore Sanitation Department, has produced several changes in refuse disposal and street-sweeping practices. The city is now charging the private contractors $2 per ton for refuse deposited in the municipal incinerator, and the city street-sweeping operations are becoming completely mechanized.

43. Barges Take Away Their Refuse. *Public Cleansing*, 51:3:126, March 1961.

A discussion of refuse collection and disposal operations in the London area. Transportation of refuse is mostly by barge, although some is carried by vehicle. Barge transportation is complicated because it must coincide closely with the occurrence of tides. The disposal areas are located in nearby marshlands and chalk pits.

44. Behind the Scenes: Refuse Collection at Purdue University. *The Street Cleaner*, 44:3:1, March 1960.

Describes refuse collection and disposal operations at Purdue University, West Lafayette, Ind. Includes vital statistics of the operations, improvements made since the installation of packer refuse trucks, and some particular problems in refuse pickup on the campus.

45. "Cleaning-on-Sea." *Public Cleansing*, 51:12:617, December 1961.

A description of refuse handling operations in the borough of Southend-on-Sea. Experiments with twice-weekly refuse collection are being conducted. Disposal is done by tipping into marshlands. Salvage of refuse is a big business, netting 3,433 tons last year. Southend has a serious oil pollution problem, and steps are being taken to remove the oil from the waters.

46. Guided Discussion on Municipal Sanitary Problems. *Canadian Municipal Utilities*, 98:11:32, November 1960.

A brief description of municipally operated sanitary landfills outside city limits and the relative merits of garbage collection and disposal by the municipality and by private contractors.

47. Important Changes Mark Philadelphia Sanitation. *Refuse Removal Journal*, 3:4:6, April 1960.

Describes Philadelphia's sanitation services and programs. Commercial and industrial refuse collections are handled by private contractors. Rubbish and garbage are separated. Ninety-six percent of the garbage is collected and disposed of by area pig farmers, and the remaining refuse is incinerated. The special problem of narrow streets and alleys is solved by a refuse collection vehicle designed to fit in small spaces. Street cleaning is done once or twice a week. "Preventive education" in the city includes the establishment of 300 junior sanitation groups and many "clean block" campaigns. City regulations cover the operations of private waste collectors.

48. Long Island Contractor Runs a Model Operation. *Refuse Removal Journal*, 4:4:6, April 1961.

A North Bellmore, N.Y., contractor operates three businesses in one—a refuse collection and disposal service, a salvage corporation, and a public garage for servicing and repairing motor vehicles.

49. Minneapolis Sanitation System Shows Efficiency. *Refuse Removal Journal*, 4:9:12, September 1961.

A brief discussion of refuse collection and disposal operations in Minneapolis, Minn. Organic garbage is collected by the city, while all other refuse is handled by private contractors. Disposal is satisfactorily accomplished at two municipal incinerators.

50. Old Quebec's Narrow Streets Can't Slow Refuse Collection. *The Street Cleaner*, 44:4:2, April 1960.

A brief summary of refuse storage, collection, and disposal in Quebec, Canada.

51. One-Man Landfill Serves 35,000 People. *Public Works*, 91:12:99, December 1960.

A description of the refuse collection and disposal operations in Janesville, Wis. One man with one machine operates the entire landfill, which is used for disposal by 35,000 area residents. Includes a detailed breakdown of collection and disposal costs.

52. Opportunity. *Public Cleansing*, 50:10:485, October 1960.

Considers refuse collection and disposal from an economic standpoint. Costs of these services are compared with other health services provided by local authorities. Costs of the different methods of disposal are compared, and salvage is taken into consideration as an economic factor.

53. Paper Bags for Speedy Garbage Collection. *The American City*, 75:6:33, June 1960.

Fredericksburg, Va., reduced expenditures 31 percent with the use of paper bags for garbage can liners, packer trucks for collection, and a sanitary landfill for disposal. They had previously used the can-exchange system of collection and had hauled the refuse to an incinerator with open trucks.

54. Refuse Disposal and Street Cleaning Lag Behind Tokyo's Booming Growth. *The Street Cleaner*, 45:6:3, June 1961.

Excerpts from an article in the winter 1960 issue of *Sweep*. See item No. 85.

55. Sanitary Landfill by Contract. *The American City*, 76:2:104, February 1961.

Describes refuse collection and disposal operations in Peoria, Ill. A private contractor provides the service at an annual per capita cost of only $3.06.

56. Tokyo Cleansing Men Prepare for the 1964 Olympics. *Public Cleansing*, 50:10:514, October 1960.

A brief description of refuse collection and disposal, river sweeping, street sweeping, and the public cleaning law in Tokyo, Japan. Seventy-five percent of the refuse is collected separately, and 25 percent of the refuse collected is mixed. Eighty-two percent of refuse disposal is by dumping, 12 percent by incineration, 3 percent by animal feeding, and 3 percent by composting.

57. "Turkish Bath" at Night for Istanbul Streets. *Public Cleansing*, 51:8:511, August 1961.

A description of refuse collection, transportation, disposal, and street-cleaning operations in Istanbul.

58. £29,000 a Year for the Collectors. *Public Cleansing*, 50:4:196, April 1960.

A study of refuse collection and disposal conditions in Wandsworth, England. Refuse containers, which are provided by the households, were found to be unsatisfactory. Data was taken on the time needed to empty the refuse containers, and the different types of refuse vehicles were inspected. In contrast to many other towns in the area, retention of labor is no problem in Wandsworth. This is probably the result of the extra income made by the collectors from the sale of salvaged materials.

59. THE VENICE STORY. *Public Cleansing*, 50:7:360, July 1960.

Explains water-borne refuse collection and disposal operations in Venice, Italy. Household bins with dustless apertures are used to collect refuse. Refuse is then tipped into barges, compressed, treated in six stages by a special automatic apparatus, transferred to larger vessels, and towed to areas where the refuse is used as a fertilizer.

60. WOODLAKE SERVICE'S BIG GROWTH IS HARD TO MATCH. *Refuse Removal Journal*, 4:12:6, December 1961.

Describes a refuse collection and disposal service in the Minneapolis, Minn., area which has expanded its business from one dump truck serving 300 customers to a large and notable refuse fleet serving more than 32,000 people. The company operates its own refuse-collecting fleet, sanitary landfill, and vehicle maintenance shop.

61. THE WORLD'S LARGEST SANITATION DEPARTMENT. *Refuse Removal Journal*, 3:8:8, August 1960.

Describes the organization and operation of New York City's sanitation department. Fourteen thousand employees using 4,000 pieces of equipment collect and dispose of 4½ million tons of refuse annually. Refuse disposal is done by incineration and sanitary landfill reached by trucks and barges. Contrary to popular belief no refuse has been dumped at sea since 1934.

Armstrong, C. A.

62. SANITARY LANDFILL OPERATIONS. *Public Works*, 92:6:152, June 1961.

A description of refuse collection and disposal practices in Rochester, Minn. Emphasizes the sanitary landfill operation and equipment used, and presents a breakdown of costs involved.

Billings, Clayton H.—Editor

63. "REFUSE COLLECTION AND DISPOSAL" (Chapter 14). *The Sewerage Manual and Catalog File—1960 Edition*. Ridgewood: Public Works Publications. 266 pp.

Describes equipment available for refuse collection and disposal. Disposal methods discussed include incineration, landfilling, hog feeding, disposal with sewage, and composting. Odor preventive compounds for use on landfills are also listed.

64. "REFUSE COLLECTION AND DISPOSAL" (Chapter 14). *The Sewerage Manual and Catalog File—1961 Edition*. Ridgewood: Public Works Publications. 289 pp.

See item No. 63.

Bjorkman, Ake

65. HOW IT'S DONE IN SWEDEN. *Refuse Removal Journal*, 3:12:10, December 1960.

A report of refuse collection and disposal and street-cleaning practices in Sweden. Refuse chutes, paper refuse-storage bags, and compacting machines are widely used. Seventy-five percent of refuse disposal is by sanitary landfilling; the remainder is by incineration and heating plants which use the refuse as an auxiliary fuel. Street cleaning is done by a combination of manual labor and sweeping machines. Includes also a discussion of the administration of the sanitation department, incentive pay for employees, and the litter problem.

66. MUNICIPAL CLEANSING IN SWEDEN. *1960 American Public Works Association Yearbook*, page 68.

See item No. 65.

67. SWEDEN AND ITS CLEANSING. *Public Cleansing*, 51:8:396, August 1961.

A discussion of refuse removal, street cleaning, and the administration of cleaning operations in Sweden.

Bloodgood, Don E.

68. COMPOSITION OF REFUSE. *Refuse Removal Journal*, 3:5:17, May 1960.

A discussion of refuse composition and its important effects upon refuse-handling practices. Since the beginning of the century the density of refuse has decreased from 40 pounds to 6 pounds per cubic foot. This indicates that refuse now contains more paper and other combustible material and less garbage. Considerable changes in refuse composition also occur from place to place and season to season.

Bronow, J. A.

69. SELF-SUPPORTING REFUSE PROGRAM. *The American City*, 76:1:78, January 1961.

Describes refuse collection and disposal operations in Tacoma, Wash. A utility within the public works department is responsible for refuse collection and must provide a self-supporting service. An entire new refuse fleet was recently installed to keep prices at a minimum. Every year during cleanup week an "open house" at the city dump is held. The city's only refuse problem is lack of landfill sites for future disposal.

Bulliung, Matt

70. BOY SCOUT JAMBOREE SANITATION. *The Sanitarian*, 24:1:18, July–August 1961.

Includes a detailed description of refuse collection and disposal practices at the 1960 National Boy Scout Jamboree at Colorado Springs, Colo. Army trailers and pickup trucks were used for collection of refuse, and a trench-type sanitary landfill was used for disposal.

Davies, A. G.

71. Public Health Aspects of Public Cleansing. *Public Cleansing*, 50:10:474, October 1960.

An examination of the possibilities of the paper bag as a medium for refuse storage. Sweden has already had practical experience with the paper refuse bag. Also evaluates dustless refuse collection, the use of garbage disposals, and composting as a profitmaking method of refuse disposal.

72. Public Health Aspects of Refuse Storage and Disposal. *The Sanitarian* (England), 69:2:84, November 1960.

A discussion of sanitary methods of refuse handling. Includes: (1) refuse storage—the problem in multistory buildings, the chute system, the bulk storage container, the turntable system, and the expendable bag system; (2) refuse collection—the dustless collection system; and (3) refuse disposal—the sink grinding unit, controlled tipping, and composting.

Diven, Melvin H.

73. A Study of Refuse Collection and Disposal System. *Public Works*, 91:10:128, October 1960.

Outlines a refuse collection and disposal system for the borough of Mount Union, Pa., on the basis of of results obtained from a study of present conditions. Includes time and frequency of collections, disposal site, supervision and equipment, estimated costs and rates for complete services, and regulations governing refuse handling practices.

Duke, Raymond Q.

74. Questions and Answers About Waste Paper. *Modern Sanitation and Building Maintenance*, 12:1:18, January 1960.

The author answers the following questions on the wastepaper problem in office buildings: (1) How do you educate tenants regarding the deposit of coffee cups, lunch leftovers, etc., in waste baskets? (2) What type of equipment is best suited for wastepaper pickup? (3) Is it more economical to bale your own wastepaper or to contract for its disposal? (4) How is the paper transferred from the point of origin to the bailing room or pickup station?

Gentry, Roy

75. Annexation Requires Refuse Changes. *The American City*, 76:3:29, March 1961.

Annexation of new area by the city of Knoxville, Tenn., will necessitate a complete overhaul of refuse collection routes and the opening of a second landfill for disposal.

Gohr, Frank

76. Hospital Sanitation. *The Sanitarian*, 23:2:75, September–October 1960.

A brief discussion of refuse collection and disposal operations in hospitals. Stresses the importance of carrying out these operations in a clean and sanitary way.

Grosse, Walter

77. Los Angeles General Invents a Cleaner, Faster Method of Ward Refuse Disposal. *Hospitals, Journal of the American Hospital Association*, 35:1:85, January 1961.

A black polyethylene plastic bag, attached to the top of a linen hamper, serves as a garbage receptacle at Los Angeles General Hospital. After the meals have been served, the bag is knotted at the top and transported from the wards to a double-chamber incinerator where the bag and contents are tossed directly into the fire pit.

Hart, S. A.

78. The Management of Livestock Manure. *Transactions of the American Society of Agricultural Engineers*, 3:2:78, 1960.

Discusses the sanitation problems caused by livestock manure and the proper management of the manure on a farm. Operations described include manure gathering, processing and storing, and disposal.

Hart, S. A.; Black, Ralph J.; and Smith, Arthur C.

79. Dairy Manure Sanitation Study, Part I: Engineering Aspects. *California Vector Views*, 7:7:43, July 1960.

A description of the methods of dairy manure handling and processing used to prevent fly production. Methods included are manure collection, transportation, storage, processing, and final disposal. States that success in manure handling and processing is measured in terms of whether general farm sanitation is maintained and fly production eliminated, and that dry lot dairy manure cannot usually be expected to be a profitmaking part of the dairy operation. (For part II of the study, see item No. 99.)

Hermes, M. L.

80. BPM Keeps House for the Housekeeper. *Sweep*, 2:1:8, Spring 1960.

Discusses the organization and duties of the Bureau of Plant Maintenance in New York City. The Bureau's primary task is the maintenance of the city's sanitation department operations.

Jackson, D. W.

81. Cleansing Services in an Expanding Community. *Public Cleansing*, 51:12:626, December 1961.

A discussion of improvements in Sunderland cleansing services in the past 25 years. Refuse disposal is now done almost entirely by controlled tipping. Salvage operations were begun, first with the collection of paper separately, and then extending to other recoverable refuse, and it has now become a profitable enterprise. An increase in street mileage necessitated an increase in the number of street and gully cleansing vehicles. A maintenance workshop for cleansing vehicles has been provided, and a general conversion from petrol to diesel-engined vehicles is being made.

Kay, J.

82. Modern Methods for the Hygenic Collection and Disposal of Refuse. *The Sanitarian* (England), 70:2:83, November 1961.

A thorough discussion of modern methods for hygienic refuse handling. Includes: (1) refuse collection—storage, removal, loading, design of the collecting vehicle, and dustless loading; (2) refuse disposal—controlled tipping, separation, incineration, and composting; and (3) conclusions drawn from the subjects discussed.

Lacy, Joe M.

83. Contact Cards—Key to Customer Relations. *The American City*, 76:6:12, June 1961.

Contact cards, new refuse collection vehicles, and a sanitary landfill located close to town have contributed to the success of the new municipal refuse collection and disposal services in Grand Junction, Colo.

84. Modernizes Refuse Collection and Disposal Service. *Public Management*, 43:7:157, July 1961.

How the refuse collection and disposal service in Grand Junction, Colo., was modernized with the establishment of a sanitary landfill, purchase of packer-type trucks, and the training of employees.

Liebman, Henry

85. Liebman Meets Japanese San-Man (and Woman) on Mission to Tokyo. *Sweep*, 2:4:3, Winter 1960.

A report on sanitation conditions and problems in Tokyo. Contains brief descriptions of Tokyo's sanitation forces, disposal facilities, river sweeping, refuse collection, and street cleaning.

86. Municipal Sanitation in Tokyo. *Public Works*, 92:9:120, September 1961.

A report on an investigation of sanitary conditions in Tokyo. Covers operations and statistics of street cleaning and refuse collection and disposal. Recommends solutions to problems in these areas and others, including public relations and the enforcement of sanitary regulations.

Magnusson, David

87. Cleansing in the International Conference City. *Public Cleansing*, 51:12:607, December 1961.

A review of refuse collection and disposal practices in Gothenburg, Sweden, by the city director of public cleaning.

McEvilly, W. G.

88. Newburgh Returns to Sanitary Landfill. *The American City*, 75:9:187, September 1960.

A discussion of revisions being made in the Newburgh, N. Y., refuse collection and disposal program. Includes restoration of the sanitary landfill, a stepped-up rodent control program, additional equipment, and future plans for the operation of an incinerator.

McHenry, Silas

89. What is Poultry Manure Worth? *Compost Science*, 2:3:13, Autumn 1961.

A discussion of removal methods and utilization of poultry manure.

Mortenson, Earl W.; and Scott, Franklin W

90. Community Services District Used to Solve Urban Refuse Sanitation Problems. *California Vector Views*, 7:8:49, August 1960.

A 1955 survey of refuse handling practices in Avenal, Calif., revealed general unsanitary conditions. The citizens voted to have its service district assume the responsibility for improving conditions, and with full public cooperation, the serious refuse sanitation problems were solved.

Neudecker, R. M.

91. Jointly Sponsored Sanitation Program. *The American City*, 75:4:168, April 1960.

City, county, State, and Federal participation on a comprehensive vector control project at Jackson, Tenn., substantially raised the overall level of community sanitation and eliminated serious health problems. The article describes improvements in refuse storage, overhaul of the refuse collection service, the mosquito control program, and the publicity received through newspapers, pamphlets, and posters.

Olmstead, Roger O.

92. A Cleaner City Through Teamwork. *The American City*, 76:9:113, September 1961.

Discusses improvements made in refuse storage, collection, and disposal practices as part of a project for better citywide sanitation in Rocky Mount, N.C.

Parker, Donald R.; Hunt, Joseph W.; and Kaufman, Eugene E.

93. A Cooperative Refuse Program. *The American City*, 75:7:94, July 1960.

Four small Oregon communities have combined efforts to provide a refuse collection service and to operate a sanitary landfill. A "key" city was established to administer the entire operation, with the others doing their share in providing the service. All of the cities adopted similar ordinances regulating the collection and storage of refuse.

Rachels, LeRoy K.

94. Municipal Refuse Practices in Oklahoma. *Public Works*, 91:5:134, May 1960.

A survey of municipal refuse collection and disposal in 292 cities and towns was conducted by the Oklahoma State Department of Health. The survey covered refuse storage and collection (frequency rates, finance, operational costs, and collection times). Information given reflects conditions in 1957 and 1958.

95. Oklahoma Studies Refuse Practices. *The American City*, 75:1:37, January 1960.

Discusses the results of a statewide study of refuse handling in Oklahoma. Includes refuse collection practices, collection fees, and collection and disposal costs.

Rossi, R. M.

96. Five-Year Program Upgrades Refuse Service. *The American City*, 75:4:108, April 1960.

Describes the improvements being made on refuse collection equipment and service, sanitary landfilling, cleaning of the equipment, and service charges in Riverside, Calif.

97. Reorganization of Refuse Collection and Compaction Results From Riverside Department Analysis. *Western City*, 37:7:46, July 1961.

A detailed description of the municipially operated refuse collection and disposal service in Riverside, Calif. A recent analysis of the city's sanitary landfill was made, and from this a compactor was purchased to extend the life of the landfill.

Screvane, Paul R.

98. This, Too, is Sanitation. *The American City*, 75:8:175, August 1960.

Describes some of the unique duties of New York City's Sanitation Department. In addition to collecting and disposing of refuse and cleaning streets, the department maintains a fleet of tugboats and refuse barges, maintains a force of 250 uniformed patrolmen, holds public auctions to dispose of abandoned automobiles, and sells the land reclaimed by sanitary landfill operations. In the future the salvaging of metal from incinerator residue might become another of the department's activities.

Smith, Arthur C.; Black, Ralph J.; and Hart, Samuel A.

99. Dairy Manure Sanitation Study, Part II: Entomogical Aspects. *California Vector Views*, 7:12:69, December 1960.

A report of an investigation of a Marin County, Calif., dairy with a history of more than five years of neighborhood strife over fly problems. Contains a discussion of the dairy layout, complete with diagram, and the manure-handling procedures. After moisture-content tests of various waste products of the dairy operation and after larval samplings, it was found that the manure placed on ramps for initial drying and jelling was the major breeding source for flies. After more tests were performed, a new system of manure disposal was devised which greatly reduced the fly problem. Details of this new system and procedures used in the investigation are outlined. (For part I of the study, see item No. 79.)

van Deusen, R. H.; and Greenwald, Jacob

100. Mount Holly's Refuse Program. *The American City*, 76:7:118, July 1961.

A description of refuse collection and disposal practices in Mount Holly, N.J. The city provides a good, efficient service at an annual cost of only $2.24 per capita.

101. Mount Holly's Refuse Program. *Public Health News*, 42:9:281, September 1961.

See item No. 100.

Vanderveld, John, Jr.

102. A Private Contractor States His Position. *Refuse Removal Journal*, 4:4:14, April 1961.

In a recent survey, 71 out of 116 Illinois communities were found to have private haulers managing their refuse collection and disposal services. Seven benefits are listed from such contract arrangements, and reasons why contractors can effect these benefits are cited.

Vincenz, Jean L.

103. For Easier Refuse Handling and Disposal . . . Will Baling be the Answer? *Public Works*, 91:2:113, February 1960.

Outlines a new proposal for refuse handling which will offset the increasing costs of refuse collection and disposal. Recommends the use of a baler to compress and bale refuse for easier conveyance and disposal.

104. Is Baled Refuse the Answer? *The American City*, 75:2:149, February 1960.

Discusses advantages and disadvantages of refuse baling. Advantages include a reduction in hauling costs, an increase in sanitary landfill life, a neater appearance of the disposal site, and better public relations. Disadvantages include the failure in developing satisfactory compressors and balers, and the difficulty of moving the baled refuse with a bulldozer.

Waldrop, Reuel H.

105. Small - Town Refuse Handling. *The American City*, 75:6:96, June 1960.

Stratford, Okla., uses a rubber-tired tractor with a front-end loader and a combined counterbalance weight and scarifier to operate its sanitary landfill. Collections are made with the tractor and a trailer-mounted, circular tank equipped with a hydraulic hoist for dumping.

Watson, J. L. A.

106. Engineering Aspects of Town Refuse Disposal. *The Surveyor and Municipal and County Engineer*, 120:3616:1163, September 23, 1961.

A discussion of the four independent stages of refuse handling—storage, collection, transportation and disposal. The handling of town refuse is an engineering problem where promotion of hygienic standards must be given top priority.

Weaver, Leo

107. 1959 Public Works Developments. *American Public Works Association News Letter*, 27:2:6, February 1960.

Briefly discusses recent developments and current trends in refuse collection and disposal practices.

E. COLLECTION—Equipment

Anderson, M. M.

108. Abilene Cuts Collection Costs. *The American City*, 76:11:27, November 1961.

The use of recording meters on the collecting trucks and the construction of a transfer station have lowered refuse collection costs in Abilene, Tex.

Anonymous

109. Company Introduces Compartmented Packer. *Refuse Removal Journal*, 3:9:28, September 1960.

A new compartmented packer has been introduced to enable loading of different kinds of refuse in the same unit, hauling them completely separated, and dumping the load at different discharge points.

110. Company Markets Packer With Many Innovations. *Refuse Removal Journal*, 3:9:26, September 1960.

A manufacturer recently marketed a new refuse packer which has pushbutton controls and a hydraulic, automatic dumping mechanism. The packer unloads by action of an ejection panel as the truck body remains horizontal.

111. Diesels Oust Horses in Gloucester. *Public Cleansing*, 50:9:440, September 1960.

A comparison of horse-drawn refuse trailers and diesel refuse trucks. From the standpoint of speed, both vehicles were found equal. Diesel trucks, however, were found less expensive and capable of giving a dustless collection. Includes a brief description of disposal and street-cleaning operations in Gloucester, England.

112. Experiment in Mass Rubbish Removal a Labor-Saving Operation. *The American City*, 75:4:213, April 1960.

Describes a trailer and crane unit which is being used for the Dade County, Fla., trash pickup program. The improvised unit is such a laborsaving device that the county has ordered four more cranes and eight more trailers for its program.

113. Experimental Unit Promises Well in Dade County, Fla. *Refuse Removal Journal*, 3:4:11, April 1960.

A special combination crane and self-packing trailer unit is providing a laborsaving, fast, and economical trash pickup service for Dade County, Fla.

114. Fewer Hauls to Refuse Disposal Area. *Food Processing*, 21:3:93, March 1960.

Describes a hydraulic compaction trailer which compacts large volumes of refuse and reduces the the number of hauls to the disposal area. The hydraulic packing mechanism moves the entire length of the trailer body and has a thrust of 65,000 pounds.

115. Fort Worth Buys Giant Refuse Collection Unit. *Public Works*, 91:8:158, August 1960.

The city of Fort Worth, Tex., has put into operation a giant 35-cubic-yard refuse truck capable of holding 11 tons of compressed refuse. The new unit, operated by five men, takes the place of two trucks operated by three men each.

116. Fort Worth, Tex., Adopts Large Trailer Method. *Refuse Removal Journal*, 3:7:18, July 1960.

The city of Fort Worth, Tex., has put into operation a giant closed garbage collection trailer which holds three times as much as a smaller collection body and reduces the number of trips to the dump.

117. Hydraulic Gate and Dump Body are Combined. *Refuse Removal Journal*, 3:10:17, October 1960.

A description of a new dual purpose, combination dump body and power gate unit. The unique feature of the unit is a tailgate which can be operated as either a standard dump body gate or a hydraulically powered platform for loading and unloading.

118. Hydraulic Loader Triples Refuse Collection. *The American City*, 75:7:39, July 1960.

A 32 cubic-yard compaction semitrailer equipped with its own clam shell loader enables the collection crew of a private hauling company in Phoenix, Ariz., to pick up three times as much rubbish in a day as was previously picked up by handloading methods.

119. Liège Experiments With Paper Sacks. *Public Cleansing*, 51:8:403, August 1961.

Liège experiments in using paper sacks for the collection of street sweepings and commercial refuse have been successful. Paper sacks as a substitute for dustbins are being tested also in many European communities.

120. Mammoth New Trailer to Make Bow on Market. *Refuse Removal Journal*, 3:8:28, August 1960.

A new 60-cubic-yard trailer for refuse handling has recently appeared on the market. Features include a packer plate that travels in both directions from the center of the trailer's cylindrical body and exerts 75,000 pounds of packing pressure, and unloading doors at both ends of the body.

121. Manufacturer Cites Improved Features of New Compactor. *Refuse Removal Journal*, 3:2:20, February 1960.

A manufacturing company claims versatility and low cost per ton-mile for a compactor which employs new loading and compacting principles.

122. Manufacturer Presents Hydraulic Packer Unit. *Refuse Removal Journal*, 4:9:38, September 1961.

A new hydraulically operated packer body has been introduced by a long-established manufacturer. The hydraulic packer unit, which produces a pressure of 10 pounds per square inch, is located at the front of the body. In this location it offers several advantages over conventional packer bodies.

123. Mass Removal of Palm Litter. *Public Works*, 91:5:206, May 1960.

A rubbish removal program has been initiated in metropolitan Dade County, Fla. A new crane and self-packing trailer unit which enables two men to do the work previously done by six is being tested in the program.

124. New High-Strength Steel Aids Slag-Hauling Firm. *Refuse Removal Journal*, 3:6:16, June 1960.

Load boxes made of a new high-strength, highly abrasion-resistant steel have increased load box life to five years, reduced maintenance costs 50 percent and annual steel tonnage requirements 30 percent, and have provided large overall savings in operational costs for a Detroit, Mich., slag-hauling firm.

125. New Refuse Collection Fleet Saves Money for Jackson. *Public Works*, 92:6:202, June 1961.

A new fleet of compaction refuse trucks has saved $50,400 annually in labor costs and has promoted better public relations in Jackson, Miss.

126. New Self-Loading Packer Enters Industry Market. *Refuse Removal Journal*, 3:11:24, November 1960.

A manufacturing company has recently marketed a new front-end loader with a single-arm lifting mechanism for containers. The loader features level-matic pickup which speeds up collection at each stop and eliminates spillage.

127. New Trend Appears in Refuse Truck Engines. *Refuse Removal Journal*, 4:11:8, November 1961.

The use of diesel engines in refuse trucks appears to be increasing among both contractors and municipal services. The main advantages of the diesel engine are fuel economy and reduction in downtime and maintenance expense.

128. Packing Machine Expands Philadelphia Hauler's Business. *Refuse Removal Journal*, 4:8:6, August 1961.

A Philadelphia contractor is using a new stationary rig for compaction in refuse containers at industrial firms. One truck, instead of the usual two or three, can now handle the same amount of refuse, and the compactors will enable the firm to obtain new business which previously had appeared to involve too much expense.

129. Refuse Fleet Features Automatic Transmission. *Refuse Removal Journal*, 4:1:16, January 1961.

The conversion from standard to automatic transmissions in Jackson, Miss., refuse trucks has increased work output by 25 percent and reduced damages and repairs.

130. Rolling Along. *Public Cleansing*, 51:4:189, April 1961.

A summarized list of comparisons between the old and new designs of the roller-floor refuse collection vehicle and illustrations showing the basic features of the new design.

131. A Tight Squeeze for Domestic Refuse. *Public Cleansing*, 50:5:250, May 1960.

A compression arrangement has been devised which will compact domestic refuse into a volume that can be more economically handled. The device must be developed to provide a compression ratio of 2.5 to 1. To reduce cost it will be employed on one static unit instead of on all refuse transporting vehicles.

132. "Tinker" Designs Scale for In-Transit Weighing. *Refuse Removal Journal*, 3:5:12, May 1960.

A California inventor has produced a scale for weighing heavy loads while in transit on trucks. The device, accurate to pounds, will provide economies to refuse haulers.

133. Tippax Bin-Lifting Vehicle. *Public Cleansing*, 50:11:558, November 1960.

Describes the latest version of the dustless refuse collection vehicle which lifts containers hydraulically. The gear of this vehicle can lift effortlessly a container of any shape and size.

Bergmann, John W.

134. Prowlers or Municipal Employees. *The American City*, 76:8:104, August 1961.

A change from hand-me-down to clean, white rental uniforms has been beneficial to refuse collectors in Hyattsville, Md. Fewer calls are now made to the police about "prowlers," fewer complaints and accusations of stealing are filed, and there has been a boost in the morale and quality of refuse collectors and a substantial reduction in collection accidents.

Black, R. Powell

135. Big Refuse Containers Pay Dividends. *The American City*, 75:5:102, May 1960.

The use of two new refuse collection trucks and 220 metal refuse containers is saving Dothan, Ala., over $50,000 per year. The new refuse collection system, which is used only for commercial and industrial establishments, requires only two drivers for its operation.

Davies, A. G.

136. A Dutch Collection Vehicle. *Public Cleansing*, 50:4:201, April 1960.

Gives details on the construction and operation of a Dutch refuse collection vehicle. The collector has a rotating drum equipped with a preloader for emptying of cans by tilting.

Dove, Lloyd A.

137. Municipal Refuse Collection Equipment—A Study of Use and Trends. *American Public Works Association News Letter*, 28:3:9, March 1961.

A survey of refuse collection equipment used in 296 cities in the United States and Canada. Includes types of collection trucks and supplemental equipment used, the trends in equipment use, a comparison of collection equipment used in the various sections of the United States, and the average number of vehicles used by cities of different sizes. Compactor trucks are the most frequently used collection vehicle, but open trucks are also widely used to supplement the compactors.

138. Report on Uniforms for Municipal Refuse Collectors. *American Public Works Association News Letter*, 28:1:1, January 1961.

A survey of 74 cities having populations of 100,000 or more shows that 18 percent provide uniforms for refuse collection personnel. The survey also reveals pertinent information about benefits received from the use of uniforms, type and cost of uniforms, and facts about other clothing and wearing apparel provided by municipalities.

Farris, William W.

139. More Service at Less Cost. *The American City*, 76:2:35, February 1961.

The use of compactor refuse collection units instead of open trailers is saving the city of Memphis, Tenn., $28.16 per unit daily and increasing by 75 per day the number of homes served.

Feldman, E. H.

140. New Rochelle Saves on Changed Back Door System. *Refuse Removal Journal*, 4:2:14, February 1961.

The use of plastic barrels for backdoor refuse collection in New Rochelle, N.Y., has saved approximately $50,000 per year in operating costs, and has improved the noise problem and general appearance of refuse collection operations.

141. Plastic Barrels Save Money on Refuse Collection. *Public Works*, 92:5:186, May 1961.

The conversion from the conventional set-out and set-back refuse collection system to a plastic barrel system has saved the New Rochelle, N.Y., Sanitation Department $50,000 in labor costs annually. The barrels have 55-gallon capacities and weigh only 7 pounds.

Fleming, Mark C.

142. Quicker Service—Cleaner Streets. *The American City*, 76:3:36, March 1961.

A specially designed cleanup unit is used to pick up lawn, tree, and shrub clippings in Delray Beach, Fla. The unit steps up collections from 250 to 1,000 cubic yards per day and enables the town to provide weekly rather than monthly collections at no increase in operational costs.

Force, Frank

143. New Compactor Replaces Two Open Trucks and Halves Collection Costs. *Public Works*, 92:1:85, January 1961.

The borough of Hellertown, Pa., cut its refuse collection costs in half by replacing two open collection trucks with a new compactor truck. With the new compactor, three men instead of six are required for collection.

Ivan, Steve

144. Doubled Refuse Collections Cost Us Less. *The American City*, 76:4:102, April 1961.

Replacement of old refuse-collecting trucks with modern, high-compaction units has enabled the city of Hammond, Ind., to extend its service to twice-weekly collections and at the same time reduce collection costs and increase safety in operations.

Jackson, D. W.

145. A Six-Year Test. *Public Cleansing*, 50:7:364, July 1960.

A 6-year study of operational costs for petrol- and diesel-engined refuse collection vehicles. Because the petrol truck requires expensive fuel, the diesel vehicle was found to be the more economical, despite its high maintenance costs and depreciation. Factual results of the test are presented in tables.

Konefes, A. W.

146. Rock Salt Freeze-Proofs Refuse Trucks. *Public Works*, 91:8:166, August 1960.

The Chicago Sanitation Department solved the problem of frozen refuse loads by the use of rock salt. One hundred pounds of salt were spread in the body of each empty truck before it left the garage. The salt prevented loads from freezing to the bottom of the trucks and made them slide out easier.

Patrick, P. K.

147. Getting the Best From Cleansing Vehicles. *Engineering*, 190:4931:561, Oct. 21, 1960.

Discusses the problems involved in keeping a balance between the demands of the operational services and the requirements of the maintenance section. Describes the maintenance and care which must be given cleaning vehicles such as refuse collectors with specialized bodies, gully emptiers, and mechanical sweepers.

Reed, Homer D.

148. Valdosta Containerizes—Saves 75%. *The American City*, 75:3:94, March 1960.

With the purchase of 131 waste containers and a refuse truck equipped with a 20-yard compactor body and a front-mounted loader, Valdosta, Ga., has reduced commercial waste collection cost by 75 percent and has improved the appearance of its business area. The equipment was purchased on a lease basis and payments on them are made from labor savings.

Rogus, Casimir A.

149. Recent Developments in Public Works Equipment. *Refuse Removal Journal*, 3:10:10, October 1960.

Recent developments in public works equipment by the New York Sanitation Department include an electromechanical truck scale and a leaf collector assembly. Steel cord tires have been tested, and prove to be the best. Local study and cost analysis will determine whether this equipment should be leased or owned by the city. Other public works equipment studied are diesel engines, automotive plastics, structural adhesives, and torque converters.

Row, Harold J.

150. How Collection Efficiency Influences Refuse Costs. *Public Works*, 92:6:135, June 1961.

Refuse collection equipment of inferior performance is purchased too often because proposals are evaluated on the basis of bid price alone and not relative performance. When new equipment is purchased, a look at the cost factor involved in operation may help determine the best buy.

Seaman, Ronald M.

151. Sanitary Collection of Wastes in Polyethylene-Lined Cans. *Modern Sanitation and Building Maintenance*, 13:8:22, August 1961.

Polyethylene-lined cans are used by the Methodist Hospital in Memphis, Tenn., for trash collection, transportation, and disposal.

Shaw, Bayard L.

152. White Uniforms for Sanitation and Safety. *The American City*, 76:12:33, December 1961.

Discusses the white uniforms now worn by refuse collectors in Trenton, N.J. These uniforms, supplied by a rental service, have increased the safety of workers.

Wagner, Dan

153. Containerized Trash Collection Adopted in Palm Springs Business District. *Western City*, 37:4:26, April 1961.

The city of Palm Springs, Calif., recently placed into operation a new containerized trash and rubbish collection system for its business district. The system consists of detachable, closed containers serviced regularly by a truck-mounted, self-loading compactor.

Wichman, W. C.

154. Old Refuse Truck Joins De-Icing Fleet. *Street Engineering*, 5:2:25, February 1960.

The Cincinnati, Ohio, Department of Public Works recently converted a conventional refuse truck which had outlived its usefulness into a sand-spreading vehicle at a total cost of only $400.

F. COLLECTION—General

Anonymous

155. Abilene, Texas, Starts Operation of Refuse Transfer Station. *American Public Works Association News Letter*, 28:5:7, May 1961.

The city of Abilene, Tex., estimates that an hour per collection unit per day in both labor and equipment time will be saved when the new refuse transfer station is put into operation. Two large packer trucks were recently purchased to carry the refuse, which is transferred from the city's smaller refuse trucks, to the disposal site.

156. Bonus Schemes in Rural Areas. *Public Cleansing*, 50:6:299, June 1960.

Discusses bonus schemes used to obtain a greater output from refuse collection workers. The main method is a bonus payment of so much per bin or property above a minimum number. In some instances a different bonus rate is established for summer and winter. Satisfactory work must be done in order to obtain bonuses. A bonus system is also set up for drivers and men working at refuse disposal sites.

157. Chicago Heights Copes With Its Growing Pains. *The Street Cleaner*, 45:8:1, August 1961.

Two proposals to produce a more efficient refuse collection service for the rapidly increasing population of Chicago Heights, Ill. The proposals are: (1) an ordinance requiring refuse pickup at the curb; and (2) the purchase of new packer units.

158. Combined Pickup Debated in Los Angeles County. *Refuse Removal Journal*, 3:6:14, June 1960.

A debate over whether or not wrapped garbage should be mixed with other forms of refuse in a combined collection program is taking place in Los Angeles County, Calif. Some are opposed to this system because it eliminates salvage, but county and city health authorities agree that it will create no health hazard and will save taxpayers the money involved in separate collections.

159. Containerization of Commercial Refuse Saves $1,000 per Week. *Public Works*, 91:5:106, May 1960.

One of the largest mass conversions of container refuse service ever attempted has been completed in Dothan, Ala. A detailed survey of commercial refuse sources and the operation of the refuse collection service was first conducted. Based on the information gathered, a new system of container refuse service was installed. Details of the survey and new system are given. Chief benefits of the new refuse system include annual labor savings of $50,000, more sanitary storage of refuse, a considerable reduction in injuries to sanitation department employees, and elimination of the scattering of materials in transit.

160. Contractor Goes After Cities' Refuse Business. *The Street Cleaner*, 44:6:1, June 1960.

A brief description of a private trucking firm which provides refuse collection service for Barrington, Rockford, Waukegan, Peoria, and several smaller towns in Illinois. This firm employs 50 packer units and 130 full-time workers.

161. Donno Co. Believes in use of One-Man Crews. *Refuse Removal Journal*, 4:7:8, July 1961.

A Long Island contractor's use of one-man refuse-collecting crews has improved the quality of service and relations with customers; has increased the sense of responsibility in employees; and has produced better vehicle maintenance records.

162. Dustless Collection on Trial in Edinburgh. *Public Cleansing*, 50:4:194, April 1960.

Describes the new dustless refuse collection system in Edinburgh. Poor refuse-handling equipment and deplorable sanitary conditions along collection routes led to the introduction of this new system.

163. Dustmen in White. *Engineering*, 190: 4931:564, October 21, 1960.

A 3-month trial conducted in Swale, England, has demonstrated that refuse collection through the use of paper sacks suspended from metal holders is free from dust and smells, and can be carried out with a minimum of workers.

164. Florida Hauler Runs a Unique Operation. *Refuse Removal Journal*, 3:10:6, October 1960.

A Jacksonville, Fla., refuse hauler has a unique commercial collection system. Maintenance of vehicles receives close attention. The entire fleet is washed and deodorized daily, waxed regularly, and painted quarterly. All drivers wear military-type uniforms. Radio equipment has been placed in all refuse vehicles. Any customer complaints are attended to immediately.

165. Free Competition is the System in Lincoln, Neb. *Refuse Removal Journal*, 3:3:10, March 1960.

Approximately 50 private contractors share Lincoln's hauling business. The Lincoln Garbage Haulers' Association has divided residential areas into districts to improve a near-chaotic refuse-collecting situation. Collection service, costing $21 annually, provides twice-weekly backyard pickups. Disposal by city-owned sanitary landfill costs each family $0.67 annually.

166. A Good Refuse Job, But Still Problems. *The Street Cleaner*, 45:2:3, February 1961.

Describes refuse collection in Cuyahoga Falls, Ohio. The big problem facing sanitation officials in this community is the need for constant replacement of workers' collection cans.

167. Good Service and Hard Eye for Details Build Up His Business. *The Street Cleaner*. 45:12:2, December 1961.

Describes a private refuse-collecting business in Joliet, Ill.

168. Hauler Helped Phoenix, Ariz., Win City Award. *Refuse Removal Journal*, 3:8:20, August 1960.

A private hauling company's high standards in refuse collecting were a major factor in Phoenix's winning the All American City Award in 1958. The president of the firm attributes the high standards to his newly installed refuse packers.

169. Historic Virginia City's Garbage Collection System Quiet, Clean and Economical. *Municipal South*, 8:10:27, October 1961.

Describes the garbage collection system in Fredericksburg, Va. The city provides residents with standard 10-gallon garbage cans and disposable, water-resistant, paper bag liners. The refuse collectors merely remove the paper liners from the cans, replace them with new ones, and carry the full bags to the truck. This paper-bag refuse collection system is quiet, clean, and very economical (saving the city $20,000 annually).

170. Incentive System Cuts Collection Costs. *The American City*, 76:9:31, September 1961.

Discusses briefly refuse collection operations in Gothenburg, Sweden. Installation of an incentive system has reduced the number of refuse collectors from 170 to 120 and has substantially cut labor costs.

171. Lincoln, Neb., Haulers Simplify Billing System. *Refuse Removal Journal*, 4:6:12, June 1961.

A streamlined bookkeeping system, built around a dry-process copying machine, saves time, improves customer relations, and results in faster payment of bills for several Lincoln refuse-hauling firms.

172. Mass. Hauler Relies on Superior Service. *Refuse Removal Journal*, 3:7:6, July 1960.

Describes clean, efficient, odor-free refuse-collecting operations in West Newton, Mass. A private hauler handles the refuse on a single 3-year contract basis with municipal authorities.

173. The Migration of Fly Larvae From Refuse Containers vs. Frequency of Collection. *Public Works*, 92:4:120, April 1961.

A condensed version of item No. 191.

174. Mock-up Work Conditions Cut City Accident Rate. *Refuse Removal Journal*, 4:8:10, August 1961.

The training of refuse collectors under simulated conditions, safety committees representing both management and labor, periodic safety meetings, and a safety scoreboard comprise the vigorous accident prevention campaign of the Long Beach, Calif., Sanitation Department. The program has resulted in 50 percent fewer severe injuries.

175. Novel Refuse Transfer Station in California. *Public Cleansing*, 51:10:522, October 1961.

Equipped with a built-in compressing mechanism, the new Santa Monica, Calif., refuse transfer station enables 18-ton loads to be carried in the bulk disposal trailers.

176. A One-Man Fleet Can Be Important Business. *Refuse Removal Journal*, 4:9:20, September 1961.

Describes a one-truck refuse collection service owned and operated by a Connecticut family. Every member contributes his share to this vital, expanding, and efficient refuse business.

177. An Open Letter to Baltimore. *Refuse Removal Journal*, 3:1:6, January 1960.

A suggestion to officials of Baltimore's Sanitation Department to consider increased use of private contract collecting in obtaining more efficiency in their refuse collection service.

178. Opportunity. *Public Cleansing*, 50:10:485, October 1960.

Discusses some of the problems resulting from refuse collection, including infectious diseases, foul smell, and strains caused by transporting dustbins. Recommended solutions include general education of the people, use of durable light refuse containers, instructions of carriers in the proper way of lifting bins, and improvement in the refuse vehicles.

179. Private Company Does Big Stockholm Business. *Refuse Removal Journal*, 3:1:8, January 1960.

Describes the operations of one of the few private refuse contractors in Europe. This firm handles 35 percent of all refuse in Stockholm, Sweden, including that of the Swedish royal family. The city-owned incinerator is used for disposal of the refuse.

180. Public Relation Formula for City Operations. *The American City*, 75:3:162, March 1960.

The Cincinnati, Ohio, Department of Public Works gives the people good service and treats them as customers in order to preserve good public relations. Collection crews are instructed to serve and never argue with the householder. The public is well informed on regulations and schedule changes, and route foremen handle any complaints.

181. Refuse Removal Giant Job at McCormick Place. *The Street Cleaner*, 45:6:1, June 1961.

Explains how a private hauler handles the giant refuse collection job at McCormick Place in Chicago, Ill.

182. St. Louis Changes to Combined Collection. *The Street Cleaner*, 45:1:1, January 1961.

A change from separate to combined collection of garbage and trash in St. Louis, Mo., has produced an annual savings of $650,000, and combined incineration of the refuse has minimized river pollution.

183. Taking the Clang out of Cleansing. *Public Cleansing*, 51:1:9, January 1961.

A discussion of the noise problem created by public cleansing operations. A table gives the amount noise (in decibels) produced by the various cleaning operations. Anything over 80 decibels is considered a nuisance. Suggestions for reducing the noise include proper maintenance of vehicle parts, soundproofing of motors, rubber lids and base rings for refuse bins, and the instruction of employees in keeping shouting, whistling, and slamming of vehicle doors to a minimum.

184. Township Has Variety of Collection Systems. *Refuse Removal Journal*, 3:3:6, March 1960.

Describes the organization of refuse services in Hempstead, N.Y. Today's tendency is toward a community breakup into refuse districts served by private contractors. All haulers, however, can use the newly improved incinerator plant owned by the township.

185. Unusual System of Collection in French Capital. *Refuse Removal Journal*, 4:8:18, August 1961.

An account of a unique system of refuse collection in Paris, France. Paris buys all of its disposal trucks and hires refuse-collecting crews, but a private contractor provides maintenance, repairs, and the drivers for the vehicles.

186. Venetian Method of Collection. *Refuse Removal Journal*, 3:9:17, September 1960.

"Dustless" refuse collection in Venice, Italy, is done by motor barges equipped with compactor bodies of 12-cubic-yard capacity.

187. Weight and Volume of Municipal Refuse. *Public Works*, 91:8:166, August 1960.

An account of results of questionnaires sent to city engineers and other persons responsible for refuse collection around the country. The questionnaires sought information on the weight and volume of refuse collections and the organizations making the collections.

188. Young Hauler Gets Fast Business Start in Year. *Refuse Removal Journal*, 4:11:10, November 1961.

Describes a growing refuse collection business owned and operated by a young man in Old Saybrook, Conn.

Barton, Alan E.

189. Dustless Refuse Collection Comes to Stay. *Engineering*, 190:4931:555, October 21, 1960.

A discussion of the rapidly changing picture of refuse collection in England. Describes the highly mechanized, dustless collection system presently being used in Birmingham and presents a cutaway view of a dustless refuse-collecting vehicle.

Bundy, George

190. Novel Refuse Transfer Station. *The American City*, 76:6:122, June 1961.

A description of the new concrete refuse transfer station in Santa Monica, Calif. Refuse is transferred from the collecting vehicles to large trailer trucks for hauling to the Mission Canyon sanitary fill. The station is equipped with its own device to compact refuse in the trailer trucks. Conversion from incineration to this new refuse transfer and disposal system saves the city $5,000 a month.

Campbell, Ernest; and Black, Ralph J.

191. The Problem of Migration of Mature Fly Larvae From Refuse Containers and its Implication on the Frequency of Refuse Collection. *California Vector Views*, 7:2:9, February 1960.

A report on an investigation of refuse containers in Concord, Calif., as a possible source of flies. Summarizes available information on fly production in refuse and describes conditions in Concord, methods of the investigation, and the results of studies made in 1957 and 1958. The larvae of flies were found to be concealed in the infested garbage cans, and many completed development and migrated from the can before the weekly refuse collection was made. Results indicated that PDB and naphthalene were of little or no value in reducing the number of migrating fly larvae. It was also stated that twice-a-week refuse collection would control the garbage can fly problem.

Carrell, J. J.

192. Safety in Refuse Collection. *Public Works*, 91:4:89, April 1960.

An analysis of the frequency and severity of accidents in refuse collection services. Describes methods used by several cities to reduce accident rates, and outlines a realistic accident prevention program.

Cole, Earl E.

193. The Same Service at Less Cost. *The American City*, 75:8:98, August 1960.

With the purchase of a 42-cubic-yard compaction trailer and the installation of a transfer station for its large-container garbage collection operation, Lakeland, Fla., will be able to provide the same service at a considerable reduction in cost. Careful estimates show that a 67-percent reduction in collection mileage, a 43-percent reduction in time, and a 24-percent reduction in annual operating costs would be possible if the city adopts the new system instead of expanding its present one.

DeJourdan, Alan M.

194. Refuse Collection in Ottawa by Contract System. *Canadian Municipal Utilities*, 99:1:23, January 1961.

Describes the refuse collection system in Ottawa, Canada. Use of two-wheeled, rubber-tired carts carrying removable steel bins has sped up refuse collection, reduced the number of trucks needed and trash cans lost, and has improved the appearance of operations.

Fairlie, P. D.

195. The Economic Collection of Refuse. *Public Cleansing*, 51:4:164, April 1961.

A study of the economics involved in refuse collection. Includes an analysis of refuse composition, refuse transportation costs, the effects of standards on efficiency and frequency of refuse output, the collection of bulky materials, and the use of incentive bonus schemes.

Graham, Charles R.

196. Montreal Area Finds Private Collection of Garbage is Better Organized and More Efficient. *Canadian Municipal Utilities*, 98:1:24, January 1960.

Discusses the growth and operation of North America's biggest refuse-collecting firm. This firm serves the Montreal, Canada, area.

Green, L. B.

197. Good Records Mean Better Control. *The American City*, 75:10:100, October 1960.

Describes the highly systematized and recorded program of refuse collection and street sweeping in Montgomery, Ala. The program includes an indexed directory of collection routes, better liaison between inspectors and drivers, anticipated and completed work reports, complaint files, street-sweeping reports, and a lubrication schedule.

Hume, Norman B.; and Kerkis, Jack I.

198. Refuse Collection in the City of Los Angeles. *Refuse Removal Journal*, 3:9:8, September 1960.

A detailed review of refuse collection operations in Los Angeles, Calif. To cope with the many problems of collection, the city uses two basic methods of scheduling: (1) workers are assigned specific

areas to be covered on certain days; and (2) workers must work a certain number of hours but do not have specific areas to cover. Each dispatcher controls 55 two-man collection crews and keeps in contact with them by telephone. Detailed records of daily performances are kept in order to maintain an efficient service.

199. Refuse Collection Operating Procedures. *1960 American Public Works Association Yearbook*, p. 93.

See item No. 198.

Johnson, Worth

200. Long Beach Uses "Mock up Area" to Test Safety Operations in Refuse Collection. *Western City*, 36:12:37, December 1960.

Experience demonstrates that mechanization in refuse collection does not eliminate accidents; only a vigorous program of safety consciousness can reduce costly injuries. The city of Long Beach, Calif., recently initiated a safety campaign in which they assigned "refuse fieldmen" to instruct workers on safe methods of refuse collection. Mockup areas were established where the fieldmen could be trained under simulated conditions and the collectors could be corrected of bad refuse-handling habits. Two safety committees were created, one representing management and the other representing the workers. Regular safety meetings and a safety scoreboard were also made part of the campaign.

Keithley, Jerome

201. Sets up Refuse Collection Program by Contract. *Public Management*, 43:11:252, November 1961.

A brief discussion of a refuse collection contract between the city of Palo Alto, Calif., and a private firm. Includes special features of the contract designed to help maintain an effective service.

King, Maurice M.

202. Stationary Compactor at Refuse Transfer Station Saves Santa Monica $60,000 per Year. *Western City*, 37:2:42, February 1961.

Describes the specifications and operation of a unique refuse-transfer station in Santa Monica, Calif., and gives the circumstances which caused the city to build it. The transfer station is equipped with a hydraulic packing mechanism which compacts refuse into large trailer trucks for hauling to the landfill site. The change from refuse disposal by incineration to sanitary landfilling and the construction of the transfer station have not only saved in disposal costs but also in collection costs, since combustibles and noncombustibles no longer have to be collected separately.

Mitchell, J. McD.

203. Private Refuse Collection Does Work. *The American City*, 76:3:153, March 1961.

A discussion of refuse collection in Marple Township, Pa. Five private haulers, licensed and controlled by the municipal authority, provide a good service at low cost.

Muir, Roland E.

204. Refuse Collection and Disposal in Minnesota (Part I). *Minnesota Municipalities*, 45:5:115, May 1960.

A summary of refuse collection techniques in Minnesota communities. The relative merits of the three types of collection being employed—municipal, contract, and private—are discussed. Other aspects of refuse collection included are frequency of collection, location of refuse containers, collection vehicles used, and distance to disposal areas. (See item No. 260 for part II and item No. 18 for part III.)

Nelson, Jack R.

205. Develops PR Program for Refuse Collection Service. *Public Management*, 43:2:37, February 1961.

A brief discussion of the way in which better public relations and information have helped to speed up and improve the refuse collection service in Westerville, Ohio.

Roan, Peter F.

206. Citizenry Informed About Refuse Collection. *The American City*, 75:4:47, April 1960.

Iowa City, Iowa, distributes to each of its residents a pamphlet providing information on refuse storage and collection and listing the telephone numbers of many of the city departments.

Robertson, G. B.

207. Equalization of Refuse Collection Routes. *Refuse Removal Journal*, 3:1:20, January 1960.

Consolidated routes, a 4-day (10 hours per day) workweek, and the addition of two 28-cubic-yard packer-type trucks for hauling refuse to the dump have made the Albuquerque, N. Mex., refuse collection system more efficient. Future plans for improvement include reorganization of routes and a radio dispatch system.

Scott, John

208. Problems of High Living and Bulk. *Public Cleansing*, 51:8:427, August 1961.

A discussion of the use of chutes for refuse collection in multistory buildings. Describes hopper design, containers and collection vehicles used, be-

havior of refuse in the chute and noise created, cleaning of the chute, the problem of chokage, and disposal of bulk materials which cannot be dropped down the chute. A study is conducted on the composition of refuse collected from three multistory dwellings and the collection procedures used.

Screvane, Paul R.

209. Bulk Refuse Collection Helps Keep New York Clean. *Public Works*, 92:2:90, February 1961.

Describes the organization, operation, and equipment used for a special bulk collection service in New York City. A table gives the annual number of truck loads and tonnage of the collection service since its inception.

Smith, Willard W.

210. Incentive Plan Cuts Cost for Refuse Collection. *Public Management*, 42:6:133, June 1960.

Revised refuse collection routes and crew assignments in Toledo, Ohio, have reduced the total work force from 222 to 190 men and the number of collection trucks from 50 to 35 in saving the city $170,000 annually. An incentive plan has also been initiated which allows the workers to quit after completing their collections for the day.

Snook, Ben F.

211. Refuse Collection Safety Pays Off. *The American City*, 76:10:110, October 1961.

A description of the refuse collection safety program of a private hauler in Seattle, Wash. The program includes weekly safety talks via a radio dispatch system, a monthly accident-review meeting and bulletin, and an annual awards banquet. The program has resulted in a 37-percent reduction in accidents, lower vehicle repair and maintenance costs, and higher morale of the workers.

Sommers, William A.

212. Revised Collection Routes Meet Suburban Growth. *Public Works*, 92:5:108, May 1961.

A report on a detailed study of refuse collection routes and procedures in Franklin Township, N.J. Because the study revealed many deficiencies, recommendations for a revised program were made. The end result was a more efficient refuse collection in a town whose population is steadily growing.

Wells, W. N.

213. Brush Collection on a Call Basis. *The American City*, 76:8:22, August 1961.

A brief description of the brush-removal service offered by the street-cleaning division of San Antonio, Tex. Six brush-collection units, each consisting of four men, a chipper, and a truck, provide the service.

Wilson, Jon

214. Refuse Improvement Gains Customers. *The American City*, 76:5:29, May 1961.

A new compaction truck, improvements in collecting and billing, and an intensive public relations campaign have added new refuse collection customers in an effort to upgrade sanitary conditions in Brinkley, Ark. Other improvements anticipated in the future are compulsory refuse collection and conversion of the city dump into a sanitary landfill.

Wilt, Race N.

215. Rubbish-Garbage Unit Payments Established by Coronado Contract. *Western City*, 36:4:24, April 1960.

Explains the Coronado, Calif., system of refuse collection. Each establishment in the city is rated according to units, and the city pays a private hauler $0.66 per unit per month for the refuse collection service. This amounts to $54,000 annually.

G. DISPOSAL—General

Air Pollution Control Association, Technical Committee TA–2, Waste Disposal

216. Air Pollution Aspects of Waste Disposal: Part I—Land Burial; Part II—Salvage. *Journal of the Air Pollution Control Association*, 10:4:297, August 1960.

Describes in part I the contributions to air pollution of open dumping, controlled open burning, and sanitary landfilling. Discusses in part II air pollution from salvage operations. These include hog feeding, composting, and direct utilization processes, such as the burning of car bodies and tin cans preliminary to salvage.

Allen, P. G.; and Miller, A.

217. Refuse Disposal in Blocks of Flats. *Housing Review*, 9:2:36, March–April 1960.

A brief account of an investigation into the four main systems of refuse disposal found in flats recently built in Great Britain. These systems are ordinary dustbins, communal containers, chutes, and the Garchey system.

American Public Work Association, Committee on Refuse Disposal.

218. *Municipal Refuse Disposal*. Chicago: Public Administration Service, 1961. 522 pp.

This comprehensive manual contains the following information: (1) a description of the seven major refuse disposal methods used today—sanitary landfilling, central incineration, on-site incineration,

garbage grinding, hog feeding, composting, and salvage and reclamation; (2) guidelines for municipal officials who must determine what disposal method a city should use. This involves such factors as size and type of city, geography and climate, public health, costs and financing, public acceptance, relationship to collection practices, and effects on other municipal services; (3) determination of the quantity of refuse that a municipality must handle, including special problems such as the disposal of construction and demolition wastes, automobiles, condemned foods, industrial wastes, explosive and hazardous wastes, pathological wastes, and refuse from disasters; (4) disposal handled through contracts with private companies and the administration and management of a municipal refuse disposal agency; and (5) appendixes giving ordinances for refuse disposal, methods of analyzing refuse and compost, provisions for contract disposal, and standards for the design and installation of domestic incinerators.

Anonymous

219. Birmingham Keeps it Light. *Public Cleansing*, 51:12:621, December 1961.

A new highly mechanized refuse disposal and salvage plant in Birmingham, England, processes 300 tons of crude refuse for controlled tipping daily. One of the unique features of the plant is its natural lighting, a principal aid to good working conditions.

220. BMU Never Gives up the Ship. *Sweep*, 2:2:9, Summer 1960.

Explains some of the duties of the Barge Maintenance Unit, Marine Division, Bureau of Waste Disposal, New York City. This unit is responsible for the emergency repair needs of the sanitation department's refuse barges.

221. A Composting Enthusiast Speaks Out. *Public Cleansing*, 50:6:297, June 1960.

A comparison of the incineration, controlled tipping, and composting methods of refuse disposal from an economic standpoint. Estimates, for a district of 27,000, the costs of refuse disposal by tipping and composting, both of which are believed to be cheaper than incineration. Concludes that producing compost from house refuse and sewage sludge is the cheapest and best method.

222. County Prepares a Master Plan for Refuse Disposal. *Public Works*, 91:8:87, August 1960.

Considers population increase and distribution, disposal site capacities, and use of transfer stations in formulating a master disposal plan for Orange County, Calif. The county's rapidly growing population has resulted in an increased demand for refuse disposal facilities, and disposal by sanitary landfill appears to be the best answer to the problem.

223. Florida Ocean Dumping Test Not a Total Success. *Refuse Removal Journal*, 4:8:11, August 1961.

The first attempt at ocean dumping of Fort Lauderdale refuse showed that the material must be loaded dry. Most of the refuse sank to the bottom, and the remaining debris was carried out to sea by the Gulf Stream. This disposal method, if successful, will cost about 5 percent of the expense of operating a city incinerator.

224. Garbage Problem. *Engineering*, 189:4903:500, April 8, 1960.

Describes the gas-fired home incinerator and the sink garbage grinder as possible solutions to the garbage disposal problem.

225. How Cities Dispose of Bulky Wastes. *The American City*, 75:12:27, December 1960.

Details of a survey taken of 24 cities over 400,000 population on the disposal of bulky wastes.

226. Organic Wastes Offer New Source of Electrical Energy. *Compost Science*, 2:2:45, Summer 1961.

Laboratory studies of the U.S. Geological Survey show that the decomposition of organic wastes can be controlled to produce electricity. This utilization may be applicable to refuse and other organic wastes.

227. Paris Model. *Public Cleansing*, 50:1:45, January 1960.

Discusses incineration, controlled tipping, and agricultural utilization as methods of disposal for the 1,250,000 tons of refuse produced annually in Paris.

228. Public Cleansing in Gothenburg. *Public Cleansing*, 51:9:455, September 1961.

A report on refuse disposal by tipping and incineration, plans for future refuse disposal, and the workshop used for maintaining the municipal cleaning fleet in Gothenburg, Sweden.

229. Refuse Disposal for a County. *Public Works*, 92:3:142, March 1961.

Results from a study of the refuse disposal problem in the Cincinnati, Ohio, area and recommendations for a solution. Taking into account future population increase, an incinerator of 500-ton capacity was recommended for the area's incineration deficiency. For financing this it was recommended that the county construct and operate the unit. Costs of the project are estimated.

230. Refuse Problem Surveyed. *Refuse Removal Journal*, 4:4:26, April 1961.

A discussion of refuse disposal practices in Great Britain. Ten years ago the most practical disposal methods were incineration and tipping. Today, however, there is a growing interest in composting and sink garbage disposals. The Garchey system, which is a method of refuse disposal used in multistory apartment houses, is described.

231. Salford's New £250,000 Depot. *Public Cleansing*, 51:10:508, October 1961.

An explanation of the operation and housing of the new cleaning depot in Salford, England. The depot, capable of handling 200 tons of domestic refuse daily, is designed for screening, separation, salvage recovery, bulk haulage of refuse, and the incineration of trade wastes.

232. The Uncalculated Cost of Sludge Disposal. *The American City*, 75:4:23, April 1960.

Incinerating sewage sludge is costing New Rochelle, N.Y., considerably more than neighboring Yonkers is spending to barge its digested sludge to sea. The difference in cost of sludge disposal, however, will be substantially less than the loss of value to New Rochelle residential areas and recreation facilities resulting from the use of awkward unattractive wharfs and bulky barges.

233. An Urban County Adopts a Master Plan. *The American City*, 75:5:29, May 1960.

Orange County, Calif., adopted a countywide plan to meet its future refuse disposal needs. Gives conclusions and recommendations of the report on this master plan.

Baffa, John J.; and Cosulich, William F.

234. Sludge Disposal Methods and Costs. *1961 American Public Works Association Yearbook*, p. 205.

In a brief discussion of methods of sewage sludge disposal, the author points out the basic function of each process, the type of operation to which it is most suited, and the approximate cost range. Describes digestion, sludge drying beds, vacuum filtration, incineration, sludge thickening, biological flotation, elutriation, heat drying, the Zimmerman process, and the atomized suspension technique.

Black, Ralph J.

235. Combined Disposal of Sewage Sludge and Refuse. *Proceedings of the Third Pittsburgh Sanitary Engineering Conference*, p. 71, November 4, 1961.

A report on the combined disposal of sewage sludge and refuse being practiced by several communities in the United States. The disposal methods include sanitary landfilling, incineration, and composting. Combined disposal will be advantageous only if the facilities are in a location where hauling costs can be kept at a minimum.

Black, Ralph J.; and Near, Lloyd B.

236. Controlled Burning on Refuse Dumps. *American Public Works Association News Letter*, 27:1:4; January 1960.

A discussion of the operation of controlled burning dumps. Includes a description of the three types of controlled burning dumps, the five classes of material handled, and the advantages of this method of refuse disposal.

Bonem, Frank L.

237. Concentrate Waste to Compact, Easy-to-Handle, Semi-Dry Pulp. *Food Processing*, 21:3:49, March 1960.

Describes an automatic waste disposal system which can be used for paper products, food wastes, rubbish, and laboratory refuse. The system consists of two units: the grinding tank with slurry pump and the water extractor with water-return pump.

Compton, C. R.; and Bowerman, F. R.

238. Waste Disposal Without Air Pollution. *Journal of the Air Pollution Control Association*, 10:1:57, February 1960.

Discusses the air pollution problems caused by some of the common methods of waste disposal and salvage. Special attention is given to the ways of reducing stack emissions from municipal refuse incinerators, to sanitary landfilling, and to the disposal of troublesome liquid and solid industrial wastes.

Cowan, J. H.

239. Past and Present at Newcastle. *Public Cleansing*, 51:7:371, July 1961.

A report of refuse disposal problems in Newcastle-upon-Tyne and progress made in improving the disposal service.

Creisler, Joe

240. The Disposal of Dead Marine Mammals. *Public Works*, 92:12:151, December 1961.

Outlines the dynamiting technique for the disposal of dead marine mammals. Although this method is the best, it sometimes proves hazardous, and another method involving the use of hot lime or chloride of lime is used.

Dazzo, Naray; and Jono, Toth

241. Reclamation of Refuse at Budapest. *Public Cleansing*, 51:11:560, November 1961.

A discussion of the need for refuse reclamation in Budapest. The refuse disposal method now in use is controlled dumping, but composting will have to be used in the future because of the need for an increase in soil fertility. Tables show the chemical and mechanical composition of refuse and the decomposition of the material used in experimental composting.

Dietz, Max R.; and Frodey, Ray C.

242. Cannery Waste Disposal by Gerber Products. *Compost Science*, 1:3:22, Autumn 1960.

Discusses in part disposal of solid wastes at a Fremont, Mich., manufacturing plant. Apple peelings and cores are sold to vinegar or pectin manufacturers, and pits from stone fruits are sold for the manufacture of an abrasive. The remaining solid wastes are used for hog feed.

Dove, Lloyd A.

243. The Area-Wide Approach to Refuse Disposal. *Proceedings of the Third Pittsburgh Sanitary Engineering Conference*, p. 93., November 4, 1961.

A discussion of countywide and metropolitanwide refuse disposal problems and some possible solutions. Includes the following: (1) refuse disposal and public health problems; (2) the relationship between refuse collection and disposal and street and highway systems; (3) the refuse transportation problem and the possible use of the railroad and helicopter in the future; and (4) legislative measures which regional bodies should consider with regard to areawide refuse disposal.

Edlin, Marion

244. A Refuse-Sewage Treatment Works. *The American City*, 75:8:89, August 1960.

The refuse incinerator and the sewage treatment plant in New Albany, Ind., are both located on the same site to enable combined plant functions wherever possible. The sewage sludge is dehydrated to about a 70-percent moisture content by vacuum filtration and then dried in a flash-drying system utilizing the waste heat from the incinerator. In addition to disposing of the community's refuse, the two 80-ton-per-day traveling-grate incinerators also burn unwanted dried sludge.

Fairlie, P. D.

245. Dust-Arresting Plant for Refuse Disposal Works. *Public Cleansing*, 50:12:588, December 1960.

A discussion of various types of dust-arresting devices. Nonmechanical systems are in use in many disposal works today, but they do not meet modern standards. The electrostatic precipitator is the best system, but it is very costly to install. The cyclone separator, which employs centrifugal action to separate the dust, is perhaps the most suitable. Wet dust collectors are also currently under consideration.

Foster, William S.

246. Nature and Magnitude of the Municipal Solid-Waste Disposal Problem. *Proceedings of the Third Pittsburgh Sanitary Engineering Conference*, p. 1, Nov. 4, 1961.

Discusses the importance of the human factor in the subject of solid waste disposal, the consequences of garbage disposal by hog feeding and refuse disposal by open dumping, and the present controversy over the use of kitchen food waste disposers. Also presents some ideas which, if developed, would make incineration and sanitary landfilling more acceptable methods of refuse disposal.

French, A. C.

247. Screen and Water Combination. *Public Cleansing*, 51:2:68, February 1961.

The combination of screens and water spray has proved successful as a dust-arresting device in the Falkirk, Scotland, refuse disposal works. Figures on a breakdown of total refuse at the disposal works are included.

Gellman, I.; and Blosser, R. O.

248. Disposal of Pulp and Papermill Waste by Land Application. *Compost Science*, 1:4:18, Winter 1961.

Discusses reasons for the increased attention being given land disposal of mill effluents, some of the background material essential for an understanding of land disposal, and results of 18 mill studies.

Golueke, Clarence G.

249. Dual Disposal of Garbage and Sewage. *Compost Science*, 2:2:8, Summer 1961.

A discussion of the effects of the combined disposal of garbage and sewage on the daily loading of solids and BOD, the rate and extent of the destruction of volatile matter, gas composition and gas produced per gram of volatile solids, sludge quality, and hauling and disposal costs.

Gordon, Mitchell

250. Cities' Rubbish Woes Grow as Volume Rises, Dumping Sites Fill Up. *The Wall Street Journal*, 158:76:1, October 18, 1961.

Discusses the problem faced by American cities today of increasing volumes of refuse and decreasing adequacy of disposal methods. Almost twice as much refuse is being discarded today as in 1940, and local governments now spend over $1 billion for its collection and disposal. Dumping sites are becoming more and more scarce, and incineration is becoming too expensive. Authorities are now looking toward composting and central grinding plants as possible disposal methods for the future.

Harral, Henry D.

251. Are Cities Responsible for Disposal of Tree Wastes? *Compost Science*, 2:3:27, Autumn 1961.

An authority on municipal government presents his views on the responsibility for treating and disposing of various waste materials, including both public and commercial.

James, Joseph A.

252. A County-Wide Disposal Program for Allegheny County, Problems and Issues. *Proceedings of the Third Pittsburgh Sanitary Engineering Conference*, p. 102, November 4, 1961.

A report on the problems and issues involved in establishing a countywide refuse disposal program for Allegheny County, Pa. Lists the county disposal problems and the refuse reports and studies conducted during the past 25 years. Discusses some of the problems in having a countywide disposal system, including land use, disposal methods, intergovernmental relations, financing, and the county's jurisdiction in the program.

Kerr, David E.

253. Intergovernment Agreement to Solve Disposal Problem. *Refuse Removal Journal*, 4:5:27, May 1961.

Joint agreements between governments of neighboring towns may solve refuse disposal problems in the future. The Shenango Valley Landfill Commission is the result of such an agreement between five small Pennsylvania communities.

Kurker, Charles, Jr.

254. A Survey of Refuse Disposal Practices in Connecticut. *Connecticut Health Bulletin*, 74:1:3, January 1960.

Results of a survey of refuse disposal practices in 155 Connecticut towns and cities with a population of 1,000 or more. Includes types of disposal areas (landfill or open dump), materials accepted at these areas, burning practices, cover material used, caretakers, salvaging, and equipment employed. Tables summarized many of the pertinent facts of the survey. Sanitary landfills are recommended to replace the open dumps being used by many communities.

Lane, J. M.

255. Municipal Solids Wastes Disposal—an Overall Engineering Evaluation. *Proceedings of the Third Pittsburgh Sanitary Engineering Conference*, p. 77, Nov. 4, 1961.

A discussion of municipal solid waste disposal from an engineering standpoint. Includes the following: (1) a brief history of solid waste disposal; (2) definition of terms; (3) some aspects of the waste disposal problem, such as the determination of the quantity of refuse, its physical and chemical composition, and the effects of trends in community production and characteristics on the problem; and (4) an evaluation of disposal methods used today—open dumping, controlled burning, hog feeding, garbage grinding, sanitary landfilling, incineration, composting, and the combined disposal of sewage sludge and refuse.

Logan, John A.

256. Air Pollution and the Collection and Disposal of Solid Wastes. *1961 American Public Works Association Yearbook*, p. 104.

A list of factors that make air pollution and solid waste collection and disposal growing problems. Summarizes the major air pollution research goals in the United States and outlines solid waste needs.

Mail, G. Allen; Hartwell, William V.; Hayes, George R., Jr.; and Funckes, Arnold J.

257. Study of Hazards in Disposing of Insecticide Containers at a City Landfill. *Public Works*, 91:7:110, July 1960.

The problem of disposing of containers and toxic waste materials resulting from the manufacture, formulation, and use of pesticides has been solved in Phoenix, Ariz. Certain precautions were taken before the disposal of these hazardous materials at the city landfill, and tests showed that these precautions provided the necessary safety for landfill personnel. This experiment resulted in several regulations governing disposal of these materials. Fiber drums which have contained highly toxic pesticides must be crushed, and metal containers must be washed and punctured before disposal. Floor sweepings and other spillage of highly toxic insecticides should be disposed of by trained plant personnel and not sent to the city landfill.

Michaels, Abraham

258. Management of Refuse Disposal Facilities. *Refuse Removal Journal*, 3:3:14, March 1960.

The chief sanitation engineer of Philadelphia discusses the following considerations in refuse disposal management: (1) the goal; (2) the individual employee; (3) the organization form; (4) personnel policies and employee relations; (5) facility design, operation, and maintenance; (6) accounting and fiscal policy; (7) planning and research; and (8) public relations.

Monson, Helmer

259. Cannery Waste Disposal by Spray Irrigation. *Compost Science*, 1:1:41, Spring 1960.

Discusses in part the separation and disposal of solids through the spray irrigation system, emphasizing the problems involved and its practicality. This method of disposing of solids would probably cost less than hauling, but in final analysis justification would depend on the particular case at hand.

Muir, Roland E.

260. Refuse Collection and Disposal in Minnesota (Part II). *Minnesota Municipalities*, 45:6:164, June 1960.

A description of refuse disposal operations in Minnesota municipalities. Open dumping, sanitary landfilling, incineration, and garbage grinding are the most commonly used methods of disposal. Outlines the cover and fill practices in sanitary landfilling and precautions which should be taken if open dumping is used. (See item No. 204 for part I and item No. 18 for part III.)

Nusbaum, Isadore; and Cook, Leland, Jr.

261. Making Topsoil With Wet Sludge. *Wastes Engineering*, 31:8:438, August 1960.

A San Diego, Calif., pilot study proved the feasibility of disposing of wet sewage sludge in deep furrows and covering the furrows with earth. Wet sludge is hauled to the site in a tank truck, and a tractor with a special horizontal blade covers the sludge and fills in the furrows. Two thousand acres of city-owned land will be converted to park land and a sludge disposal area will be provided for the next 20 years.

Roberts, Frank

262. Hygienic Refuse Disposal. *Royal Society of Health Journal*, 81:1:39, January–February 1961.

A discussion of refuse disposal operations in Great Britain. Includes separation and incineration, composting, and controlled tipping. Recommends collaboration between local authorities for a more efficient regional disposal program.

Savage, Eldon P.

263. The Formation of a Metropolitan Refuse Authority. *The Sanitarian*, 22:4:224, January–February 1960.

A discussion of the refuse disposal problem in Lebanon County, Pa., a county serving as a sanitation demonstration area for the Northeastern United States. The main goals of the program are to form a metropolitan refuse authority, to close open dumps, and to start sanitary landfills for the county. Steps in the program include: (1) a survey to determine the nature of the refuse disposal problem; (2) a review of past attempts to correct disposal inadequacies; (3) a review of legal methods which could be used to correct deficiencies; (4) education and motivation for group action; and (5) a sanitary landfill demonstration with technical assistance to select landfill sites and develop proper landfill operations.

Stirrup, F. L.; and Gahan, D. F.

264. Constructing a New Central Depot and Disposal Plant. *Public Cleansing*, 51:6:301, June 1961.

A discussion of the construction of a central depot and disposal plant from the standpoint of both a public cleaning officer and an engineer. Includes initial stages of planning, requirements to provide an effective service, techniques and methods of construction, engineering difficulties which might be encountered, and reasons for using special methods and materials.

Storm, Murray I.

265. Orange County Adopts Master Plan of Refuse Disposal. *California Vector Views*, 7:5:32, May 1960.

Orange County, Calif., made a big step forward when, in November 1959, the board of supervisors adopted the *Master Plan of Refuse Disposal*. The most important results of the plan are given, and the major projects of refuse disposal facilities in the past two years are outlined. The master plan is a long-range program for which the residents of Orange County will spend $4.5 million between the present time and the year 2000. It is hoped that this plan will provide a proper, efficient, and economical refuse disposal system for the county's rapidly increasing population.

Wadhams, E. H. C.

266. Waste Disposal From Broiler Stations. *Royal Society of Health Journal*, 80:3:149, May–June 1960.

Discusses in part the disposal of the solid wastes (feathers and inedible offal) of the poultry industry. Possible disposal methods listed are rendering plants, which transform wastes into useful poultry food materials, refuse tipping, and composting.

Weaver, Leo

267. Refuse Disposal, Its Significance. *Ground Water Contamination, Proceedings of the 1961 Symposium*, Robert A. Taft Sanitary Engineering Center Technical Report W61–5, April 1961. pp. 104–110.

A discussion of the effects of land refuse disposal on the contamination of ground waters. Includes descriptions of both the potential and existing problems.

H. DISPOSAL—Composting and Reduction

Anonymous

268. Ask Bids for Composting Phoenix Refuse. *The American City*, 75:3:161, March 1960.

Phoenix, Arizona, has asked for proposals from private individuals or corporations for the composting of city refuse. The city plans to collect and transport the refuse to the composting plant.

Refuse disposal by composting will cost the city about the same as operating its landfill, but the city expects to receive some refunds from compost sales.

269. A British Composting Plant Serves 25,000. *Public Works*, 91:9:144, September 1960.

A composting plant has been constructed at Renton to handle 25 to 27 tons of crude refuse per day from a population of about 25,000. The plant, which uses the Dano system, will be capable of utilizing 5 tons of 92.4-percent-moisture sewage detritus per day. A conveyor transports the refuse to a picking table and under a magnetic separator to extract ferrous metals. Five days are required for passage through the drum with accompanying stabilization at about 135 degrees Fahrenheit.

270. Compost Arrives in the North-West. *Public Cleansing*, 51:9:473, September 1961.

Describes the operation of a new Dano composting plant in the borough of Radcliff. Prospects are good for a contract permitting sale of the compost. Sale of the compost will totally offset the cost of plant construction and operation.

271. Edinburgh Goes "Wet". *Public Cleansing*, 50:9:432, September 1960.

A description of the installation and operation of wet dedusters at the Dano composting plant in Edinburgh, Scotland.

272. Equipment for Processing Organic Wastes. *Compost Science*, 1:2:20, Summer 1960.

A report on available machinery that can be used in the various stages of large-scale composting, and equipment for processing wastes for direct return to the soil. Includes grinders and shredders, composting units, and tractors for material handling.

273. Equipment for Processing Organic Wastes. *Compost Science*, 1:3:42, Autumn 1960.

More information on equipment available for composting and processing wastes. Includes descriptions of grinders, composting units, driers, and pumps.

274. Financial Considerations of Composting. *Compost Magazine*, 20:1:25, February 1961.

Emphasizes the fact that the composting of municipal refuse as a profit-making process is only of secondary importance; of primary importance is whether or not composting provides an inexpensive and sanitary method of refuse disposal. Discusses a few uses of compost, and cites the Netherlands as a country which has successfully employed composting for the disposal of refuse.

275. Financing a City Compost Plant—Four Views. *Compost Science*, 2:1:12, Spring 1961.

Four of the world's leading authorities on composting express their views on financing city compost operations. Some authorities believe that a city should not be charged by the private firm for processing its refuse because sufficient revenue can be earned from compost marketing. Others believe that since disposal is a municipal responsibility, the city should meet the expense.

276. Florida Doctor Urges Disposal by Composting. *Refuse Removal Journal*, 4:7:15, July 1961.

A Fort Lauderdale, Fla., physician presents reasons why he believes composting would be the ideal method of disposal for southern Florida.

277. Gothard Talks on Composting. *Public Cleansing*, 50:3:112, March 1960.

The sale of refuse and sewage sludge compost in the States of Jersey, England, reduced the net cost of waste disposal from 27s.5d. per ton in 1956 to 13s.8d. in 1958. Greater savings in disposal costs are anticipated as the plant is developed to full capacity. Orders for compost were received months ahead of production in 1960.

278. How to Compost Fallen Leaves. *Compost Magazine*, 19:2:18, April 1960.

The author gives some hints on how to successfully compost fallen leaves.

279. Method Developed for Sewage Conversion. *Compost Science*, 2:2:43, Summer 1961.

Describes a newly developed and patented system for converting sewage sludge to compost.

280. Phoenix, Ariz., Plans Disposal by Composting. *Refuse Removal Journal*, 4:2:8, February 1961.

Looking ahead to the time when its landfill operations will become prohibitively expensive, the city of Phoenix, Ariz., has recently signed a contract with a private organization to operate a compost plant. Three such plants to be constructed in the future will eventually replace the sanitary landfill as a means of refuse disposal.

281. Phoenix Looks Into Composting. *The American City*, 75:8:31, August 1960.

After a nationwide search, Phoenix, Ariz., accepted an offer to have its refuse composted and transformed into fertilizer.

282. Phoenix Makes Progress With Compost Plant. *Compost Science*, 1:2:46, Summer 1960.

A discussion of the working agreement between Phoenix, Ariz. city officials and a private firm to install a composting system for disposal of city refuse.

283. Phoenix Ready for First Compost Plant. *The United States Municipal News*, 27:21:84, November 15, 1960.

A brief description of the first full-scale commercially operated composting plant in the United States.

284. Phoenix Receives Bids for Compost Plants. *Compost Science*, 1:1:46, Spring 1960.

Excerpts from the invitation issued by Phoenix, Ariz., authorities to private firms for proposals for the building of compost plants. City officials plan to change the refuse disposal system from sanitary landfilling to composting within the next 2 years.

285. Proposal for Composting Refuse Sought by Phoenix, Arizona. *Public Works*, 91:2:180, March 1960.

A brief description of guide points established by the city of Phoenix, Ariz., for any private company interested in submitting a proposal to build and operate the city's planned composting plants.

286. Pulveriser. *Public Cleansing*, 51:12:615, December 1961.

The burgh of Johnstone, Renfrewshire, now treats its refuse with a new rotary pulverizer capable of screening and pulverizing 50 to 60 tons of refuse daily.

287. Refuse Composting in Phoenix. *The American City*, 76:4:36, April 1961.

A brief discussion of plans for the United States' first full-scale commercial composting plant in Phoenix, Ariz.

288. World Developments in Municipal Composting. *Compost Journal*, 20:5:17, October–November 1961.

Reviews the progress being made in refuse composting in 15 countries.

Block, Seymour S.; Tsao, George; and Han, Lunghwa

289. Production of Mushrooms From Sawdust. *Compost Science*, 1:4:39, Winter 1961.

A report on research work designed to determine how effectively sawdust and other cellulosic wastes might serve as a medium for mushroom production. Results show that good yields of mushrooms can be produced from the wastes.

Bollen, W. B.; and Glennie, D. W.

290. Processing Wood Waste to Increase Crop Yields. *Compost Science*, 2:3:38, Autumn 1961.

A report on experiments conducted to determine the best way to process wood wastes for the most advantageous usage as a mulch and soil conditioner. To be used successfully for these purposes, wood wastes must be fortified with nitrogen and phosphate.

Braun, Rudolph

291. The Processing of Refuse and Sludge. *Compost Science*, 2:2:27, Summer 1961.

Describes the Dano, Buhler, and SMG processes for the treatment of waste materials. Although refuse and sludge disposal by incineration is practiced in some large cities, composting is the most practical method for less populated areas.

Bridger, Roy

292. Humus Farming Can Cut Food Bills. *Public Cleansing*, 50:11:538, November 1960.

Discusses farm problems and suggests the use of composted refuse and grass in combination as a possible solution.

Chapman, Guy B.

293. Better Compost With a Smaller Bin. *Compost Journal*, 20:4:16, August–September 1961.

Gives hints on how to produce better compost using the bin-type process. Advocates smaller container (approximately 2 ft. x 2 ft. x 4 ft. in height) made out of light non-heat-conducting material. Also suggests a composting technique.

Compton, C. R.; and Bowerman, F. R.

294. Composting Operation in Los Angeles County. *Compost Science*, 1:4:5, Winter 1961.

A discussion of studies on composting methods currently used in Los Angeles County, Calif. Describes experiments in refuse composting and sewage sludge processing. Composting cannot be done on a large scale, however, until a compost market is created.

Davies, A. G.

295. Composting Sewage Sludge With Municipal Refuse. *Compost Science*, 1:3:9, Autumn 1960.

A discussion of composting sludge-refuse mixtures. The addition of sludge to refuse will increase the nutrient value of the compost and will reduce sludge disposal costs. The sludge must first be dewatered, however, to provide proper moisture for composting with refuse.

296. Conservation of Organic Waste. *The United States Municipal News*, 27:6:23, March 31, 1960.

A brief survey of composting in foreign countries. The survey includes Hungary, Czechoslovakia, Germany, Holland, and Israel.

297. Keeping the Soils of Israel Alive. *Public Cleansing*, 50:1:38, January 1960.

A discussion of composting in Israel. Two composting plants in the process of being built demonstrate the transition from the traditional practice of disposal in unsanitary dumps. Most of the refuse in Israel is of a compostable nature, and the resultant compost could supply about 25 percent of the agricultural needs.

298. Lesser-Known European Compost Processes. *Compost Science*, 2:1:41, Spring 1961.

A description of composting methods which have not previously been described in detail in the United States. Includes three types of composting processes: (1) semi-accelerated fermentation, (2) simple and open air fermentation, and (3) accelerated fermentation.

299. Mechanized Composting of Sludge and Refuse. *Engineering*, 190:4931:563, October 21, 1960.

Explores the possibility of processing together both household refuse and sewage sludge to obtain a saleable municipal compost. Though this idea is highly controversial, a plant in Jersey is already combining the two wastes, and a plant at Leatherhead will eventually add sewage sludge to its refuse composting process.

300. *Municipal Composting*. London: Faber and Faber, 1961. 203 pp.

An authoritative and comprehensive book on the composting of municipal waste. Describes the various methods of composting and types of plants used throughout the world; considers the particular problems of the small, local authorities; discusses the use of sewage sludge in municipal composting and the vexed issues of costs and sales; and gives practical information on the relationship between municipal compost and the soil.

301. Processing and Marketing Compost in Switzerland. *Compost Science*, 2:2:40, Summer 1961.

Describes refuse composting operations at a plant in Muttenz, Switzerland, and marketing of the finished product.

302. Processing Wastes at Toulouse, France. *Compost Science*, 2:3:32, Autumn 1961.

Describes the pilot composting plant in Toulouse, France. Although this plan now processes only a small quantity of the town's waste (20 tons per day), the sale of the compost has more than offset operational costs, and indications are that the total operation, when extended to process all the town's waste, will prove to be economical.

Dunn, Stuart; and Emery, Judith D.

303. Wood Waste in Composts. *Compost Science*, 1:4:26, Winter 1961.

A report analyzing the use of wood waste to improve soils. The results suggest the best methods for composting the wood waste, materials for aiding the compost process, and methods for testing such composts by plant growth cultures.

Eriksson, Archie

304. Waste Treatment at Hawaii's Oahu Prison. *Compost Science*, 1:4:44, Winter 1961.

Municipal wastes in Honolulu are hauled to the Oahu Prison, where they are composted and marketed. This program was originally started as a work project for the prisoners and as a public relations angle to improve ties between inmates and the island population, but it has now developed into a highly successful method for the disposal of waste and the production of soil conditioners.

Farkasli, Georg

305. Composting in Hungary. *Public Cleansing*, 51:6:320, June 1961.

A review of composting developments and operations in Hungary. Four different types of compost are produced: sludge, dustbin, pig manure, and simple peat compost. Little mechanization is used in the composting operations. Because of the great need for compost and the manufacturing restrictions on artificial fertilizers, no serious marketing problems occur.

Fuller, Wallace H.

306. Composting of City Refuse. *Journal of Milk and Food Technology*, 24:12:385, December 1961.

A discussion of the composting of city refuse. Includes the microbiological, chemical, and physical aspects of composting and the aims for a good

finished product. Lists the advantages of the composting of city refuse. These include: a more effective method of refuse disposal, a means of supplying organic matter for soil building, and the possibility of reclaiming materials such as glass and metals.

Fuller, W. H.; Johnson, Gordon; and Sposito, Gary

307. Influence of Municipal Refuse Compost on Plant Growth. *Compost Science*, 1:3:16, Autumn 1960.

A report on research into the influence of municipal refuse compost on plant growth. Results demonstrated that the compost supplied the plants with nutrients and enhanced their growth.

Gabaccia, A. J.

308. Composting Waste Sludge From Pharmaceutical Manufacturing. *Compost Science*, 1:2:8, Summer 1960.

A discussion of composting methods at a pharmaceutical manufacturing plant in Pearl River, N.Y. Six to ten tons of organic sludges are disposed of daily by a modified multistage composting process.

Galle, Fred C.

309. Compost Bins of Concrete. *Parks and Recreation*, 44:4:170, April 1961.

See item No. 310.

310. Concrete Bins Solve a Problem. *Compost Science*, 1:4:33, Winter 1961.

The use of concerete compost bins covered with black polyethylene sheets instead of open compost piles has solved the fly problem in the Ida Cason Callaway Gardens at Pine Mountain, Ga.

Geraghty, Cecil J.

311. Report on Composting Emphasizes Efficiency. *Refuse Removal Journal*, 3:1:12, January 1960.

Discusses three composting processes which are claimed to save land area, to require a minimum of equipment, and to compare favorably in cost with all other disposal methods. A compost process must be developed primarily as a waste disposal process and only secondarily as a reclamation operation.

Gessel, Stanley P.

312. Composting Wood Wastes With Other Organic Materials. *Compost Science*, 1:1:26, Spring 1960.

A report on research into the use of sawdust, bark, and shavings as soil conditioners. Also explains how these materials can be processed with other commonly available waste materials.

Ghosh, R. K.

313. Correlation Between Organic Matter and Nitrogen in Municipal Compost. *Compost Science*, 2:3:36, Autumn 1961.

Studies of compost samples in India show that there is a consistent relationship between nitrogen and organic matter values.

Golueke, Clarence G.

314. Composting Manure by Anaerobic Methods. *Compost Science*, 1:1:44, Spring 1960.

A description of a small digester which reduces manure to humus and a combustible gas. The digester provides sanitary disposal of manure, humus and nutrients for use on soils, and methane gas for use as a fuel.

315. Composting Refuse at Sacramento, California. *Compost Science*, 1:3:12, Autumn 1960.

Describes the layout and operation of a Dano composting plant near Sacramento, Calif. Composting costs at this plant, which amount to $3.25 per ton, compare favorably with incinerating costs, which range from $3.25 to $8 per ton, and demonstrate the economic feasibility of refuse disposal by composting.

Gotaas, Harold B.

316. Materials-Handling Method for Composting. *Compost Science*, 1:1:5, Spring 1960.

A discussion of methods and equipment for receiving, conveying, shredding and/or pulverizing refuse. Important considerations are reception of refuse, separation of salvage and preparation for its sale, composting of refuse, and preparation of the finished product for the market.

317. Planning Municipal Composting Facilities. *Proceedings of the Third Pittsburgh Sanitary Engineering Conference*, p. 33, November 4, 1961.

A report on the planning and designing of composting operations. Some of the aspects of these tasks include: deterrents preventing composting from becoming a successful means of refuse disposal; a description of materials and marketability studies; and a detailed outline of steps in the composting process.

Gothard, S. Averill

318. Garbage Processing in Jersey, British Isles. *Compost Science*, 2:1:7, Spring 1961.

A discussion of some of the problems which arise in municipal composting and the methods adopted to cope with them in a Jersey plant now in operation.

319. MECHANIZED MUNICIPAL COMPOSTING. *Compost Magazine*, 20:1:22, February 1961.

Summarizes the basic principles and requirements needed for the composting of municipal waste.

Grindrod, J.

320. SIX YEARS OF REFUSE COMPOSTING IN BRITAIN. *Public Works*, 92:12:110, December 1961.

Describes refuse composting in Great Britain. A lack of space for controlled tipping (sanitary landfilling) has forced many British communities to compost their refuse. Two compost plants in Britain are compared and several others are briefly described.

Hardy, Woodrow

321. GRINDING WASTE MATERIALS. *Compost Science*, 1:2:45, Summer 1960.

A brief discussion of the objectives of grinding various organic wastes, and a comparison between wet and dry grinding.

Henderson, J. A.

322. COMPOST MAKING WITHOUT TEARS. *Compost Magazine*, 19:5:23, October 1960.

The author describes his experiences and ideas in the composting of waste materials for use as garden fertilizer.

Henderson, John M.

323. REFUSE COMPOSTING IN INDIA. *Compost Science*, 1:2:43, Summer 1960.

A discussion of refuse composting methods in India and their applicability to composting in the United States. Includes the Indore and Bangalore processes.

Jacobs, Homer L.

324. HOW CITIES CAN MAKE USE OF WOOD CHIPS. *Compost Science*, 2:1:18, Spring 1961.

A discussion of ways of utilizing wood chips. Emphasizes the need for more research on this problem.

Jann, G. J.; Howard, D. H.; and Salle, A. J.

325. METHOD FOR DETERMINING COMPLETION OF COMPOSTING. *Compost Science*, 1:3:31, Autumn 1960.

Research at the University of California has produced a simple procedure for determining the end of the composting period based on pH changes which take place in organic material. It was found that organic material, if fully composted or stabilized, will maintain an alkaline pH for 24 hours.

Kaibuchi, Yonosuke

326. RESEARCH ON COMPOSTING OF THE CITY REFUSE AND NIGHTSOIL. *Proceedings of the American Society of Civil Engineers, Journal of the Sanitary Engineering Division*, 87:SA6:101, November 1961.

A detailed description of several years of composting research, with both a pilot plant and a 25-ton-per-day proto plant. Studies included evaluation of two types of high-rate mechanical digesters and forced-air curing bins.

Keller, P.

327. METHODS TO EVALUATE MATURITY OF COMPOST. *Compost Science*, 2:3:20, Autumn 1961.

Describes methods used for evaluating the maturity of compost. Includes methods based on physical characteristics (odor, color, structure, specific gravity, and temperature), chemical analysis, and biological studies.

Knoll, K. H.

328. PUBLIC HEALTH AND REFUSE DISPOSAL. *Compost Science*, 2:1:35, Spring 1961.

Findings by a European scientist of research into the effect of composting on pathogens commonly occurring in refuse and sewage sludge.

Leaver, Robert E.

329. MARKETING SEWAGE SLUDGE IN THE NORTHWEST. *Compost Science*, 2:1:44, Spring 1961.

Describes the experience of municipalities in the Northwestern United States in distributing sewage sludge as a soil conditioner.

Lee, David B.; Patton, V. D.; and Harding, C. I.

330. FLORIDA'S VIEWPOINT—SOLID WASTE BY COMPOSTING. *Compost Science*, 2:2:30, Summer 1961.

The Florida State Board of Health has been considering composting as a means of refuse disposal for the future and has set up design criteria for such a system. Present disposal practices in Florida are unsuitable for a rapidly increasing population.

Lesinski, John

331. WHY I INTRODUCED COMPOST LEGISLATION INTO CONGRESS. *Compost Science*, 2:3:30, Autumn 1961.

A Michigan Congressman explains why he introduced a bill providing Federal assistance to communities for the construction of municipal compost-

ing plants. Cites two reasons: (1) his interest in using composted material to fertilize the soil, and (2) his desire to help his district solve their disposal problems.

Lindell, O. V.

332. Listing of Compost Plants in Europe. *Compost Science*, 1:2:19, Summer 1960.

Brief descriptions of 27 foreign composting installations.

Matsui, Mitsuma

333. Effects of Sawdust Compost on Seedlings Grown in Pesticide-Treated Soils. *Compost Science*, 2:1:23, Spring 1961.

A report on studies of the effects of sawdust compost on seedlings grown in soils treated with biocides. An attempt was made to counteract the ill effects of the eradicants by applying fermented sawdust compost to the soil. Results demonstrated that the sawdust reestablished the soil's productive capacity.

McCalla, T. M.

334. Microorganisms and the Breakdown of Organic Materials. *Compost Science*, 1:2:12, Summer 1960.

A discussion of the organisms that cause materials to decompose and the factors which influence their effectiveness. The organisms are critical to all successful composting operations.

McGauhey, P. H.

335. Refuse Composting Plant at Norman, Oklahoma. *Compost Science*, 1:3:5, Autumn 1960.

A description of the Norman, Okla., composting plant, which handles all of the community's refuse (about 35 tons per day). The four major plant phases are receiving, sorting, and salvaging; grinding and mixing; composting; and screening, bagging, and storing.

Meechin, Jack D.

336. Ingredients Necessary for Composting. *Compost Magazine*, 20:2:11, April 1961.

Lists, for the guidance of beginners, some of the ingredients which go into making a quality compost stack.

337. Municipal Composting and the Results. *Compost Journal*, 20:4:18, August–September 1961.

A description of the composting plant at Leatherhead in England and a report on tests made on municipal compost produced at the Edinburgh plant.

Moulton, George L.

338. Mobile, Alabama Schedules Compost Plant. *Compost Science*, 2:1:15, Spring 1961.

A description of the proposed compost plant in Mobile, Ala. The plant is designed for processing 360 tons of municipal refuse daily and producing 52,800 tons of organic compost and 11,300 tons of salvagable material annually. Includes brief descriptions of other compost installations being planned in Phoenix, Ariz.; Springfield, Mass.; and North Miami, Fla.

Olds, Jerome

339. How Cities Distribute Sludge as a Soil Conditioner. *Compost Science*, 1:3:26, Autumn 1960.

A discussion of methods used by cities for the distribution of sludge and the important role of the plant superintendent in distribution. Offers some suggestions for increasing the acceptance by the general public of sludge as a soil conditioner.

340. New Uses for Problem Wastes. *Compost Science*, 2:1:31, Spring 1961.

A report of studies on the utilization of such materials as wool, feathers, whey, and wastes from sugar cane and slaughterhouses for soil improvement.

341. Processing Poultry Manure for Fertilizer Use. *Compost Science*, 1:2:24, Summer 1960.

Descriptions of successful poultry manure processing plants in Connecticut, Arizona, and Delaware. Of all the farm manures, poultry manure is the richest in plant food value, and if correctly conserved and marketed it can mean millions of dollars of extra income annually for the poultry farmers.

Oxen, William L.

342. Filter Press Mud as Plant Food. *Compost Science*, 2:2:39, Summer 1961.

A suggestion for making better use of filter mud, a byproduct of the sugar cane industry. Filter mud is rich in plant nutrients and is endowed with properties which contribute to plant growth.

Perini, A. J.

343. Don't Underestimate Those Wood Chips. *Parks and Recreation*, 43:4:190, April 1960.

A discussion of the ways in which wood chips and trimmings can be utilized. Conversion into a mulch provides an excellent means of disposal of the wood wastes.

Rees, Donald F.

344. What is Necessary for Composting Success? *Compost Science*, 2:3:4, Autumn 1961.

Pointers on establishing a successful large-scale composting operation. The following hints are given: (1) price the compost low to sell the full output; (2) have adequate financial backing; (3) advertise the product; (4) establish an experimental farm; (5) conduct research on the compost and sewage markets; (6) use any compost surplus for land reclamation; and (7) hire effective management and personnel.

Riker, Ralph W.

345. Four Years of Compost Progress in Williamston. *Refuse Removal Journal*, 3:10:24, October 1960.

The Williamston, Mich., composting plant has proved a successful means of disposal of garbage, undigested sewage sludge, and other organic wastes. The 30-35 percent moisture content of the compost aids in keeping the bacteria alive. All compost being manufactured is readily sold.

Rodale, Robert

346. Marketing of Large Amounts of Compost. *Compost Science*, 1:1:15, Spring 1960.

A discussion of the distribution and marketing of compost. Emphasizes the great need for compost, compares compost and fertilizer marketing, describes the highly variable dollar value of compost and distribution techniques that can be used by compost manufacturers.

Rohde, Gustav

347. Berlin Throws Away 6 x 6 Metres x 102 Miles Loaf Each Day. *Public Cleansing*, 51:5:258, May 1961.

An analysis of refuse in the democratic sector of Berlin. Sixty percent of the refuse is unused kitchen waste which could be used for animal feed and soil fertility.

Scharff, J. W.

348. An Englishman Looks at Composting in North America. *Compost Science*, 1:2:5, Summer 1960.

Gives impressions received during a recent tour of of the United States and Canada of the position and prospects of urban composting in these areas. Describes his visits to Savannah, Ga.; Darien, Conn.; Toronto, Canada; Lansing, Mich.; and Sacramento and San Francisco, Calif.

Schulze, K. L.

349. Rate of Oxygen Consumption and Respiratory Quotients During the Aerobic Decomposition of a Synthetic Garbage. *Compost Science*, 1:1:36, Spring 1960.

A report on research into the amount of oxygen that is needed during the different stages of decomposition in the composting process.

350. Relationship Between Moisture Content and Activity of Finished Compost. *Compost Science*, 2:2:32, Summer 1961.

A study of the relationship between moisture content of compost and its oxygen uptake rate. Describes procedures and results of the experiment in detail.

Scott, J.

351. Refuse Separation and Composting in Edinburgh. *Compost Science*, 2:3:7, Autumn 1961.

A review of factors involved in the decision to construct a refuse separating and composting plant in Edinburgh. Answers questions concerning economic value, output, efficiency compared to incinerator plants, pathogenic bacteria, glass problems, compost analysis, and compost marketing.

Shuval, Hillel I.

352. Composting Municipal Garbage in Israel. *Compost Science*, 1:1:21, Spring 1960.

A discussion of composting operations in Israel, including descriptions of nonmechanized windrow composting; processing of stabilized garbage from open dumps; the mechanized, high-rate aerobic composting plant in Tel Aviv; and the Dano biostabilizer plant in Haifa. The high organic content of Israel's garbage which produces high quality compost and the general critical shortage of soil fertilizers and conditioners have made composting a profitable enterprise in Israel.

353. The Economics of Composting Municipal Refuse. *Proceedings of the Third Pittsburgh Sanitary Engineering Conference*, p. 47, November 4, 1961.

An economic analysis of two Israeli composting plants—the 50-ton-per-day plant now in operation in Haifa and the 500-ton-per-day plant under construction in Tel Aviv. Includes a brief description of the composting processes used at the two plants, a discussion of the existing compost market in Israel, an economic comparison of the two plants, and a general comparison of incineration and composting costs.

Snell, John R.

354. Composting Around the World. *Compost Science*, 1:1:30, Spring 1960.

A detailed discussion of 12 composting plants throughout the world. Evaluates the economics involved for capital outlay, operating costs, nitrogen-phosphorus-potassium value of composts, and potential markets.

355. COMPOSTING—THEORY VS. PRACTICE. *1960 American Public Works Association Yearbook*, p. 171.

See item No. 358.

356. PROPER GRINDING—KEY TO EFFICIENT COMPOSTING. *Compost Science*, 1:4:9, Winter 1961.

A discussion of grinders and shredders and their value in the composting process. Grinders greatly accelerate the composting process, facilitate the mixture of different kinds of food, offer greater insulation of the compost thereby reducing heat and moisture loss, and produce a uniformly ground and digested end product.

357. THE ROLE OF TEMPERATURE IN THE GARBAGE COMPOSTING PROCESS. *Compost Science*, 1:2:28, Summer 1960.

A discussion of temperatures reached during the composting process, the effects of temperature ranges, and the importance of temperature control.

358. THEORY AND PRACTICE IN COMPOSTING PLANTS. *Refuse Removal Journal*, 4:1:10, January 1961.

A discussion of three types of composting methods—windrow methods, patented or package deal methods, and the author's independent design. Aspects of these composting methods include grinding, seeding, aeration, temperature control, and moisture control. Recommends that municipalities employ private enterprises for selling the compost. Lists five ways of securing a compost plant, and estimates costs for large and small plants.

Staffeldt, E. E.

359. ELIMINATING DISEASE IN COTTON GIN WASTES BY COMPOSTING. *Compost Science*, 1:2:32, Summer 1960.

New Mexico tests show that *Verticillium albo-atrum*, a disease commonly found in waste cotton plant residue, can be eliminated by composting the cotton gin wastes and making them safe for return to the soil.

Teensma, B.

360. COMPOSTING CITY REFUSE IN THE NETHERLANDS. *Compost Science*, 1:4:11, Winter 1961.

A discussion of the history of composting in the Netherlands and the successful composting and marketing methods used there today. Describes the "van-Maanen," Dano, and rasping systems of composting. At the moment 30 percent of all city refuse in the Netherlands is converted into compost, and this quantity is increasing every year.

Teufel, Robert J.

361. HOW STATE FERTILIZER LAWS AFFECT COMPOST MARKETING. *Compost Science*, 2:3:16, Autumn 1961.

Discusses several aspects of compost marketing, including regulation by State fertilizer laws, variable compost prices in different regions, distribution of compost by fertilizer companies, the importance of attractive packaging, and the increasing rate of fertilizer consumption.

Tietjen, Cord; and Banse, Hans Joachim

362. SOIL IMPROVEMENT SOCIETY IN GERMANY PRODUCES AND MARKETS COMPOST. *Compost Science*, 1:2:35, Summer 1960.

See item No. 363.

363. SOIL IMPROVEMENT SOCIETY ORGANIZED TO PRODUCE AND TO UTILIZE COMPOST OF REFUSE. *California Vector Views*, 7:1:1, January 1960.

To construct and operate their own composting plant, a group of compost consumers at Bad Kreuznach, Germany, founded a society of soil improvement. The society chose the Dano method of composting. Article describes the operation of the plant and the methods of applying compost.

364. STRUCTURAL ANALYSIS OF COMPOST PILES. *Compost Science*, 1:4:15, Winter 1961.

Experiments conducted in Germany reveal the differences in the physical structure of compost and their effect upon aerobic decomposition of organic materials.

Toth, S. J.

365. USING ORGANIC WASTES IN AGRICULTURE. *Compost Science*, 1:1:10, Spring 1960.

A discussion of the organic waste materials of industry and their potential agricultural use. Suggests formation of research groups sponsored by industries with waste disposal problems to evaluate the use of the residues for agricultural purposes.

Toth, S. J.; and Alderfer, R. B.

366. AGRICULTURAL VALUE OF COFFEE GROUNDS. *Compost Science*, 1:3:38, Autumn 1960.

A report on research into the possible agricultural use of coffee grounds. The following are important results: (1) the nitrogen content in the grounds is unavailable for plant use; (2) use of the grounds to improve moisture-holding capacity is without benefit; (3) oils and tannins in the grounds are not deleterious to crops; (4) grounds may improve aeration in soil and increase plant size; and (5) grounds should be composted with fertilizer and lime to obtain maximum benefits.

Vasin, N.

367. Composting Wastes on Russian Farms. *Compost Science*, 1:4:31, Winter 1961.

A discussion of the procedures used in composting city wastes on Russian farms.

Vlamis, J.; and Williams, D. E.

368. Test of Sewage Sludge for Fertility and Toxicity in Soils. *Compost Science*, 2:1:26, Spring 1961.

A report on studies comparing the growth of plants which received applications of sludge and chemical fertilizers. It was shown that sludge may be supplemented by chemical fertilizers, but at high sludge rates the amount of chemicals added must be carefully regulated.

Wainman, W. T.; and Cross, E. J.

369. Visit to Hastings Scheme. *Compost Magazine*, 19:6:14, December 1960.

Describes the composting process used to dispose of municipal refuse in Hastings, New Zealand. The finished compost is of high quality, and there is no problem in selling the stock.

Wilde, S. A.

370. Marketable Sawdust Composts. *Compost Science*, 1:2:38, Summer 1960.

A report on research into the utilization of sawdust composts and the costs involved. Tests proved conclusively that sawdust composts counteract the ill effects of eradicants, restore soil fertility, and stimulate plant growth.

Wiley, John S.

371. An Approach to Municipal Composting. *Compost Science*, 2:2:6, Summer 1961.

An analysis of the present and future status of composting as a hygienic and practical means of public refuse disposal.

372. A Look at European Composting. *Public Works*, 92:2:107, February 1961.

Explains reasons for composting and describes eight different composting systems used in Europe. Tables give data on composting installations, including construction and operating costs.

Wiley, John S.; and Spillane, Janet T.

373. Refuse-Sludge Composting in Windrows and Bins. *Proceedings of the American Society of Civil Engineers, Journal of the Sanitary Engineering Division*, 87:SA5:33, September 1961.

A discussion of successful composting methods achieved at Chandler, Ariz., in 2 runs involving 4 windrows and 25 aeration bins of ground refuse and refuse-sludge mixtures. The composting materials were turned an average of 5.1 times by regrinding and were composted for a mean of 34.4 days. The two methods produced very similar results with an average decomposition of 38.8 percent of the volatile solids. The raw refuse was of poor quality and the sludge had a high water content. Pasteurizing temperatures were maintained for days, and there were few odor or fly problems. The windrow method appears to be practical for plant-scale use and should adequately decompose refuse or refuse-sludge mixtures in a total time of about 5 weeks with five rigorous turnings during the first 3 weeks.

Wylie, J. C.

374. Development of Municipal Composting in Britain. *Public Cleansing*, 51:5:226, May 1961.

A brief history of the development of British composting. Composting plants have helped to halt prodigious waste of organic matter, to bring soil fertility to the land, to stop smoke pollution from incineration, and to eliminate water pollution from industrial waste.

Xabregas, Joaquim

375. Coffee Wastes are Valuable. *Compost Science*, 2:2:44, Summer 1961.

A report on tests conducted to determine the value of coffee wastes. Eighty tons of potentially valuable fertilizers are produced with each 100 tons of commercial coffee.

I. DISPOSAL—Garbage Disposers

Anonymous

376. Food Waste Disposers. *Consumer Bulletin*, 44:3:6, March 1961.

A discussion of food waste disposers and reports and ratings of 16 different types presently on the market.

377. Garbage Disposal Unit: 4 Models From Only 2 Extra Parts. *Modern Plastics*, 38:9:171, May 1961.

Describes a recently developed design for making four different models of garbage disposals from the combination of four plastic parts. The key idea of the plan is that of designing the main housing in a minimum number of parts that can telescope together for various combinations and can be decorated in different colors.

378. Grease From Garbage Grinders not Significant in Wichita. *The American City*, 75:5:36, May 1960.

Garbage grinders do not add significantly to the grease problems at the Wichita, Kans., sewage

treatment plant because of the large volume of grease from the meat-packing industries. The grease is mixed with primary sludge and pumped to digesters for disposal.

379. Health Departments Comment on Home Food Waste Disposers. *Public Works*, 91:11:163, November 1960.

Presents the comments and reactions of State health departments on the use of home food waste disposers. Most of the States take a neutral position. Because of the use of waste disposers, a considerable increase in septic tank capacity is reported to be needed.

380. In Order to be "Garbage-Free." *The American City*, 75:5:232, May 1960.

Presents attitudes of several city officials on the use of sink garbage disposers and excerpts from ordinances requiring the installation of disposers in new buildings. More than 60 cities are attempting to become "garbage-free" through the use of the garbage disposers.

381. Label Modern Disposal Units a Boon to Rats. *Refuse Removal Journal*, 4:8:24, August 1961.

Conditions in Des Moines, Iowa, call attention to a new and increasing problem of rat populations attracted by kitchen garbage disposals.

382. A Study of the Use of Home Food Waste Disposers. *Public Works*, 91:11:82, November 1960.

Results from a survey of State health departments and cities across the Nation on food waste disposers and their side effects. Answers such questions of interest as: (1) Are disposers permitted? (2) What percentage of homes are equipped with them? (3) Has there been any significant reduction in the volume of refuse collected? (4) Has there been any saving in collection costs? Data by States are summarized in tabular form, and comments from engineers and a summary of State reactions are included.

383. The Truth About Garbage Disposers. *Good Housekeeping*, 152:4:145, April 1961.

A discussion of sink garbage disposers, including a comparison of the two principal types, capacity, proper operation, costs of the unit and its installation, and materials which the disposer can and cannot handle.

384. Waste Disposal. *Engineering*, 192:4973: 192, August 11, 1961.

Describes two types of food waste disposers—one, a fixed unit for installation under the sink, and the other, a free-standing portable unit.

385. What Families With Children Should Know About Food Waste Disposers. *Parents' Magazine*, 36:3:82, March 1961.

Answers such questions as how a food waste disposer operates, what it will take, how much noise it creates, and how it is installed.

Bendixen, Thomas W.; McMahan, Anthony A.; Thomas, Richard E.; and Coulter, James B.

386. *Effect of Food Waste Grinders on Septic Tank Systems.* Robert A. Taft Sanitary Engineering Center Report. Cincinnati: U.S. Department of Health, Education, and Welfare, Public Health Service, November 15, 1961. 91 pp.

The report of a study sponsored by the Federal Housing Administration to determine the effect of food waste grinders on septic tank systems. Some of the conclusions of the study were: (1) the addition of ground food wastes to septic tank systems produced a significant increase (37 percent) in the rate of accumulation of scum and sludge; (2) systems receiving ground food wastes showed a higher rate of failure; (3) septic tank-soil absorption systems that received ground food wastes required a greater absorption area (about 25 percent more) to give performance comparable with systems that received no food wastes; (4) the addition of the ground food wastes had no influence on the start-up of digestion in septic tanks nor did it impede the process; and (5) properly designed and maintained septic tank-soil absorption systems can handle ground food waste with more tank capacity and increased leaching area.

Carter, John Mack

387. Will There be Garbage Cans on the Moon? *The American Home*, 64:8:4, August 1961.

An editorial emphasizing the need to replace unsanitary and unsightly garbage cans with kitchen garbage disposals and to create "garbage-free" communities. Cites Lodi, Wis.; Detroit, Mich.; and Jasper, Ind. as communities which are using ordinances requiring the installation of disposals to advantage. Also gives false reasoning behind laws prohibiting use of disposals.

Habeeb, Virginia T.

388. What You Want to Know About Garbage Disposers. *The American Home*, 64:8:79, August 1961.

A presentation of outstanding facts about garbage disposers. Includes such information as cost, operation, safety, advantages, the kinds of material which disposers can handle, use of tap water and electricity in operation, clogging of drainpipes, cleaning of the disposer, the noise problem, electrical wiring and plumbing needed, the life of the disposer, and its effects on the septic tank.

Mick, Kerwin L.

389. Garbage Grinding and Sewage Strength. *The American City*, 76:2:25, February 1961.

Records of the Minneapolis-St. Paul Sanitary District over the past 20 years indicate that garbage grinding has considerable effect on sewage strength.

Montgomery, Charlotte

390. A City Without Garbage. *Today's Health*, 38:7:44, July 1960.

Discusses the unsanitary and unsightly conditions caused by inadequate storage of garbage, and the increasing use of home garbage grinders as a possible solution to the problem. A survey in Savannah, Ga., demonstrated that inadequate refuse containers attract flies, and studies in Hidalgo County, Tex., showed that fly population is related to intestinal disease and infant deaths. There are over 4 million garbage disposers in use in the United States today, and also several all-disposer, garbage-free communities.

Roth, Herbert S.

391. Sixth Year With Garbage Grinders. *The American City*, 75:4:162, April 1960.

Discusses the conditions that led to communitywide installation of garbage grinders in Shorewood Hills, Wis., and the costs of installing and operating them. The garbage grinders are owned, installed, and maintained by the community.

Watson, K. S.

392. Eliminating Garbage With Food Waste Disposers. *1961 American Public Works Association Yearbook*, p. 120.

A discussion of the effect of food waste disposers on sewage characteristics in the Denver, Detroit, and Los Angeles areas. In many communities in these areas, the installation of food waste disposers is required by ordinance. Article gives conclusions drawn from investigations.

Watson, K. S.; and Clark, Curtis

393. What Ground Garbage Does to a Sewerage System. *The American City*, 76:7:108, July 1961.

A discussion of the effects of ground garbage on a sewerage system, based upon practical experience in Aurora, Colo. To solve its garbage problems, this community built a sewage treatment plant large enough to handle all of its garbage and sewage.

J. DISPOSAL—Incineration

Abplanalp, Glen H.; and Stephenson, Junius W.

394. Don't Abandon That Old Incinerator . . . Yet. *Public Works*, 92:10:109, October 1961.

Discusses renovation of old incinerators which have become inefficient and unsatisfactory because of the radical change in refuse composition in recent years. Describes some of the problems involved in using old incinerators, and gives examples of modernization programs at a few plants. In many cases old incinerators can be restored at a fraction of the cost of constructing a new one.

395. Regulation of Refuse Incinerator Design by Public Agencies. *American Journal of Public Health*, 50:8:1155, August 1960.

In the past poor incinerator design resulted in unsatisfactory operating conditions producing smoke, odors, and fly ash. The only solution to this problem is close State control of incinerator design, based on sound established criteria.

Anonymous

396. Ash Removal System is Built for Small Plants. *Refuse Removal Journal*, 3:10:8, October 1960.

Describes and illustrates a new ash removal system designed for incinerators in small industrial plants, hospitals, hotels, motels, schools, and institutions.

397. Backhoe Solves Incinerator Problem. *Public Works*, 92:3:123, March 1961.

Two new storage bins, hydraulically operated charging gates, and a backhoe to handle accumulated refuse have improved burning characteristics and eliminated time-wasting tieups of loaded refuse trucks at the Waltham, Mass., incinerator.

398. Chicago Incinerator Plant to Utilize Waste Gases for Steam Generation. *American Public Works Association News Letter*, 28:5:4, May 1961.

To utilize furnace waste gases, each of the four 300-ton furnaces in Chicago's Southwest Incinerator will be equipped with 50,000-pound-per-hour waste heat boilers. Two companies operating power plants in the vicinity of the incinerator have contracted to purchase all of the steam produced except that which will be used to heat the incinerator plant.

Mick, Kerwin L.

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399. Continued Improvement for the Hempstead Incinerator. *Public Works*, 92:9:133, September 1961.

Outlines the distinct stages of the modernization program for the Hempstead, N.Y., incinerator. Modernization was required because of the radical change in the composition of the refuse.

400. Foamed Silica Stops Lining Failures in Incinerator Chimney. *Plant and Power Services Engineer*, 2:1:19, January 1960.

Replacement of the refractory brick lining with a foamed silica lining in the stack of a Toronto, Canada, incinerator has eliminated the hazardous problem of cracked lining caused by temperature changes and has increased the cross-sectional area inside the stack.

401. The "Gas Chamber" for Domestic Waste. *Public Cleansing*, 50:4:182, April 1960.

A description of a completely automatic, smokeless and odorless incinerator which contains a device that combusts its smoke and gases.

402. Gas-Fired Incinerators. *Institutions*, 49:4:127, October 1961.

The article advocates gas-fired incinerators for efficient, nuisance-free waste disposal in institutions. Factors that control combustion and considerations in selecting and installing an incinerator are the main points of the discussion.

403. Hammermill Grinds Lumber for Incineration. *The American City*, 76:10:22, October 1961.

A description of an incinerator equipped with a hammermill which is being tested as a means of disposal for large lumber. New York City expects soon to ban all open burning of lumber at demolition sites in order to reduce air pollution. This special incinerator may serve as an alternative disposal method.

404. Haulers Incorporate to Construct Tepee Burner. *Refuse Removal Journal*, 4:9:14, September 1961.

Minneapolis, Minn., refuse haulers solved their disposal problem by joining together to construct a $100,000 tepee incinerator. Even though there are close working relations among the haulers in this corporation, the members remain free and independent firms.

405. The Hoskinson Incinerator. *Smokeless Air*, 30:114:262, Summer 1960.

A description of a dual purpose incinerator which features smokeless incineration and waste heat utilization.

406. Incinerator Dispute Enlivens Roslyn, L. I. *Refuse Removal Journal*, 3:6:8, June 1960.

The Roslyn, Long Island, dispute over the selection of a site for the new incinerator remains unsettled. The North Hempstead Town Board of Supervisors has obtained a referendum vote to build the plant on a bluff overlooking the harbor. Citizens who think this location will hinder a nearby beach are continuing their struggle for relocation.

407. Incinerator Fire Jet System. *Safety Maintenance*, 121:2:33, February 1961.

Describes a fire protection system for municipal incinerator storage pits. Special jets are designed and arranged to cover the entire rubbish area with a finely divided fog of water, to which a wetting agent has been added. The system is actuated by a series of detectors strategically placed to detect the infrared radiations of fire. The spray continues until the fire is controlled, and alarms are sounded in the building and at fire or police headquarters.

408. Incinerator Near Residential Area is Community Showplace. *Public Works*, 91:2:117, February 1960.

A description of the construction and operation of a new municipal incinerator serving two southeastern Pennsylvania communities. The new incinerator burns up to 12½ tons of refuse per hour and is operated by only four men. The building housing the incinerator and the landscaping have been designed to blend with the surrounding residential area.

409. Incinerator Pays Its Own Way. *Engineering News-Record*, 164:19:112, May 12, 1960.

The $1.8 million refuse disposal plant in Atlanta, Ga., earns enough money each year to pay for its operation and help pay for its construction by selling the byproducts of the incinerator. The steam is sold for $150,000 and the reclaimed tin cans for $205,000 annually.

410. Modification of Incinerator Precipitator Baffle Saves $15,000 per Unit. *Public Works*, 92:7:174, July 1961.

Stainless-steel incinerator baffles have been replaced with baffles of low porosity, low density firebrick in Rochester, N.Y., incinerators. The replacements produced a $15,000 savings per unit and were longer lasting.

411. Municipal Incinerator Personnel Management Practices in Twelve Cities. *American Public Works Association News Letter*, 27:2:12, February 1960.

Summarizes personnel management practices in municipal incinerator plants in 12 cities. The practices pertain to salaries of the various plant personnel, overtime payment, absentee replacement, employee benefits, and plant maintenance and operations.

412. New Method for Disposal of Toxic Cyanide Wastes. *Refuse Removal Journal*, 4:7:12, July 1961.

A specially designed incinerator is used to burn off industrial cyanide waste material in this new method of disposal. Tests have shown that there is no pollution of the air, and because it is no longer necessary to use public water for disposal, the water pollution problem is eliminated. A schematic drawing accompanies the description of the disposal operation.

413. Philadelphia Firm Has Its Own Incinerator. *Refuse Removal Journal*, 4:6:8, June 1961.

A Philadelphia firm operates a specially designed incinerator which disposes of the firm's refuse and that of other city contractors. An incinerator of a slightly different design is also in the planning stage.

414. Polmadie—Refuse Disposal in the Grand Manner. *Public Cleansing*, 50:5:259, May 1960.

Describes the Polmadie separation and incineration plant. Special features of the plant include a setup to insure ease of traffic movement, four independent incineration units, and a first floor location of the furnaces.

415. Refuse Disposal Problem Completely Solved. *Public Cleansing*, 50:11:569, November 1960.

The incinerator plant in Bern, Switzerland, is an example of efficient incineration and use of byproducts. Heat produced at the incinerator serves water conduits leading to a group of hospitals and schools, and a steam conduit leading to a group of factories. Excess steam is used to generate electricity at peak load periods, and the exhaust steam is used to heat the plant.

416. Somerville Builds an Incinerator. *The American City*, 75:5:219, May 1960.

Long hauls to landfill sites made it necessary for Somerville, Mass., to construct a new 450-ton-per-day incinerator. The plant, which costs slightly over $3,000 per-ton-day capacity, will be self-supporting on the income from the disposal of wastes from industry and neighboring communities.

417. A Study of Sootfall. *Modern Sanitation and Building Maintenance*, 13:4:17, April 1961.

See item No. 466.

418. The Swiss Don't Miss Incinerator Thrift. *The American City*, 75:2:32, February 1960.

Describes a recently built incinerator in Bern, Switzerland, which uses its waste heat to produce steam for two factories and hot water for a 1,200-bed general hospital, a 120-bed children's hospital, a dental institute, and a school.

419. Those In-The-House Incinerators. *Good Housekeeping*, 150:4:171, April 1960.

Discusses compact refuse-burning appliances which can be installed inside the house. Includes the size, cost, proper use, and installation of these appliances.

420. Tighter Controls on Refuse Burning. *The American City*, 76:2:29, March 1961.

Stricter enforcement of the Air Pollution Control Regulation 2 in the San Francisco Bay area has reduced particulate matter and undesirable gases from incinerators.

421. A Tough Floor for a Rough Job. *The American City*, 75:3:36, March 1960.

The use of an iron-aggregate concrete topping on the pit bottom of a Cleveland, Ohio, incinerator is expected to eliminate the problems caused by the intense impact and abrasion to which the pit bottom and sides are subjected.

422. Waste Burnt Without Smoke. *Engineering*, 189:4903:489, April 8, 1960.

Describes a new incinerator which will burn any kind of inflammable wastes without smoke or smell and will utilize the waste heat produced.

423. When Should a Community Consider Incineration as a Method of Refuse Disposal? *Public Health News*, 41:10:351, October 1960.

Discusses location, capacity, elements of design, and cost of incinerators, and gives factors in deciding when to consider incineration as a means of refuse disposal. Disposal by incineration is best suited for areas with large and concentrated populations. If refuse hauling costs exceed $1.50 per ton, consideration of incineration is warranted.

Baum, Vincent

424. Something Different in Incinerator Design. *The American City*, 75:11:108, November 1960.

A description of the Rye, N.Y., incinerator plant. Interesting features include a weighing arrangement that eliminates the scale house and scale man, the use of a monorail hoist rather than a crane, a hydraulic fly-ash removal system, and a residue removal system that cuts dirt and dust to a minimum.

Blanke, John H. D.

425. Incinerator Stacks and Ash Disposal. *Power Engineering*, 64:5:69, May 1960.

Describes various devices used for collecting and handling incinerator fly ash and residue. Includes stack design and methods of ash disposal.

426. Stokers for Incinerators—New Trend to Traveling Grates.—*Power Engineering*, 64:2:82, February 1960.

A discussion of three types of mechanical grates designed to increase the efficiency of incinerators for refuse burning—the inclined, endless belt grate; the inclined, rocking grate stoker; and the rotating arm stoker.

Botker, Lloyd

427. Highland Park Landfill Improved by New Burner. *Refuse Removal Journal*, 4:3:8, March 1961.

The acquisition of large quantities of bulky burnables and the appearance of nearby trees blighted by Dutch elm disease have forced the city of Highland Park, Ill., to install a conical incinerator on its sanitary landfill site. Municipal employees designed and constructed the burner without outside help.

Brokaw, Arthur T.; and Slaby, Steve M.

428. Revolving Grates Make the Difference. *The American City*, 76:6:109, June 1961.

A description of the rotating grates used at the Princeton, N.J., incinerator. The grates increase the burning rate of the furnaces by as much as 200 percent and reduce manpower requirements.

Caine, John B.

429. How Hot is "Too Hot" in an Incinerator? *The American City*, 76:11:104, November 1961.

Presents some solutions to the problems of metal expansion, growth, and breakage in municipal incinerators.

Carpenter, Howard F.

430. From Garbage to Electricity. *American Public Works Association News Letter*, 27:11:15, November 1960.

Since 1935 Providence, R.I., has utilized waste heat from its municipal refuse incinerator to generate electricity for use at the sewage treatment plant, sewage pumping station, and other municipal buildings. Built in connection with the original 160-ton-per-day incinerator were two waste heat boilers of 680 horsepower each and two turbogenerators, each with a capacity of 1,250 kilowatts and with an 80 percent power factor. Another 160-ton-per-day unit was added in 1950 with two waste heat boilers of 680 horsepower connected to the original turbogenerators.

Chass, Robert L.; Tow, Philip S.; Lunche, Robert G.; and Shaffer, Norman R.

431. Total Air Pollution Emissions in Los Angeles County. *Journal of the Air Pollution Control Association*, 10:5:351, October 1960.

Describes in detail the major sources of air pollution in Los Angeles County and the quantity of contaminants from each source. After the use of open fires and single-chamber incinerators were banned, emissions from the incineration of combustible refuse were reduced to a fraction of prior emissions.

Fisher, Morris A.; and Langer, Gerhard

432. New Instrumentation for Municipal Incinerators. *1961 American Public Works Association Yearbook*, p. 224.

A description of an instrument that can produce immediate measurements of stack emissions. Developed by the Armour Research Foundation, this device will improve the design and operation of municipal incinerators. Article describes the design of the primary component, a dynamic diluter, and a particle counter.

Flaherty, John F.

433. Boston's Incinerator is a Steam Producer. *The American City*, 75:6:104, June 1960.

A new 900-ton-per-day incinerator, serving 360,000 people in Boston, Mass., will utilize heat in the generation of steam for the Boston City Hospital. The design elements of the building, and equipment and construction costs are given.

Foster, William S.

434. When to Build an Incinerator. *The American City*, 75:3:118, March 1960.

Discusses conditions that may make refuse disposal by incineration worth considering, and gives some design standards which must be accepted in considering the construction of an incinerator.

Fox, E. B., Jr.

435. Three Incinerators Solve Refuse Problem. *The American City*, 76:8:102, August 1961.

Describes the three incinerators which are being used for the disposal of Delaware County, Pa., refuse. County officials examined various methods of refuse disposal and chose incineration over sanitary landfilling and composting. The three incinerators cost in excess of $5.6 million.

Goff, C. D.

436. Only One Answer: Incineration. *The American City*, 75:4:94, April 1960.

Discusses present and future refuse disposal facilities in Milwaukee County, Wis. A lack of available land for sanitary landfilling has made county officials look toward incineration as the best long-range program of refuse disposal. Large incinerators built and operated under intersuburban cooperation seem to be better than small incinerators in individual communities.

Graydon, Stafford W.

437. Utilization of Waste Heat From Incinerators. *1961 American Public Works Association Yearbook*, p. 135.

See item No. 438.

438. Waste Heat Utilization From Incinerator Plants. *Refuse Removal Journal*, 4:10:8, October 1961.

Waste heat from incinerator plants can be utilized in several ways: (1) to furnish heat and power for the plant itself, for other plants, or for institutions such as hospitals and schools; (2) to furnish steam for operations requiring high pressure blasts of steam; and (3) to produce electrical power from the conversion of steam. A good example of waste heat utilization can be found at the Atlanta, Ga., incinerator, where operating expenses are offset by the use of this byproduct.

Hama, G. H.; and Curley, L. C.

439. Apartment Building's Negative Pressure Gulps Smoke From Incinerator Doors. *Heating, Piping, and Air Conditioning*, 32:6:147, June 1960.

Smoke escaping through incinerator doors into living areas was a problem in a Detroit, Mich., apartment building. After a thorough examination of the incinerator system, it was recommended that the stack be power exhausted.

Hayden, John L.

440. Belmont, Mass., Incinerator Gives Complete Fly-Ash Control. *The American City*, 75:1:76, January 1960.

A detailed description of the fly-ash control apparatus at the Belmont, Mass., incinerator. Gases from the secondary chamber pass through thermostatically modulated water sprays and enter a centrifugal collecter which removes over 99 percent by weight of all entrained matter. A pneumatic thermostat signals the pneumatic controllers on the regulating valves which control the spray bank. Gives results of a 244-minute test of the fly-ash control unit.

Heaney, Frank L.

441. More Than Just a Garbage Burner. *The American City*, 75:9:102, September 1960.

A detailed description of Miami's new $1½-million incinerator, along with several photographs, a cross-sectional diagram of the stack, and manufacturer's ratings of the component parts. The incinerator contains two 300-ton-per-day rotary kiln units integrated into a storage pit and crane operation.

Kaiser, Elmer R.

442. Unsolved Problems With Flue-Fed Incinerators. *Journal of the Air Pollution Control Association*, 11:5:254, May 1961.

Additional investigation and field trials are needed to obtain more information on the use of flue-fed incinerators. Some of the areas to be studied are: the improvement of furnace configurations; the control of flue-gas leakage into the buildings; the performance of incinerators with bypass flues; the manipulation of furnace charges to complete burnout without increasing atmospheric pollution; the performance of built-in settling chambers; and the basement installation of gas scrubbers.

Kaiser, E. R.; Halitsky, J.; Jacobs, M. B.; and McCabe, L. C.

443. Modifications to Reduce Emissions From a Flue-Fed Incinerator. *Journal of the Air Pollution Control Association*, 10:3:183, June 1960.

An extensive study on reducing the emission of contaminants from flue-fed incinerators was made in New York City. The methods studied include charging of refuse only during nonburning periods, using gas burners to promote combustion, limiting the flow of combustion air, scrubbing the flue gas, and combinations of these devices. Includes an estimate of the investment and operation costs involved. Flue emissions during nonburning periods are described in the appendix.

Kaiser, E. R.; and Tolciss, J.

444. Auto Body and Bulk Waste Incineration. *Refuse Removal Journal*, 3:11:8, November 1960.

A study of the incineration of bulk wastes which are not normally consumed in conventional municipal incinerators. Gives results from a survey of U.S. cities on bulk waste disposal. Discusses conical burners, tunnel burners, air pollution, disposal costs, and the burning of scrapped automobile bodies.

445. Incineration of Automobile Bodies and Bulky Waste Materials. *1960 American Public Works Association Yearbook*, p. 178.

See item No. 444.

Koomen, C.

446. The German Destructor in Sao Paulo. *Public Cleansing*, 51:3:136, March 1961.

A description of a refuse destructor plant in Sao Paulo, Brazil. The plant demonstrates its high degree of efficiency by completely incinerating refuse which has a very high moisture content (50–57 percent).

Koppenhauer, Orville E.

447. Incineration of Hospital Wastes. *Hospitals, Journal of American Hospital Association*, 35:9:91, May 1961.

Suggests practices that will make incineration a safe and effective method of disposing of hospital wastes. The discussion includes design criteria for proper combustion, charging of the refuse, safety controls, and practices that will lengthen the life of the incinerator.

Kure, C. John

448. Incineration Disposal in Modern Communities. *Refuse Removal Journal*, 3:9:25, September 1960.

A discussion of the history of incineration, incinerator design, four types of stokers, refractories, and waste heat utilization. Compares the Calumet Incinerator in Chicago, Ill., with the Euclid Incinerator in Euclid, Ohio.

Larkin, Morgan C.

449. New Trends in Hospital Incineration Design. *Air Engineering*, 3:4:33, April 1961.

A discussion of some of the disposal problems that the changing pattern in refuse composition has caused hospitals to face. The solution may be a new incinerator design to cope with the increasing thermal value of the refuse.

Leake, John W.

450. Incineration Disposal of Municipal Refuse. *Refuse Removal Journal*, 4:2:10, February 1961.

Incineration may become the most economical method of refuse disposal in the future. Improved incinerator design offers these advantages: both combustible and some previously noncombustible substances can now be burned; residue from industrial plants can be handled; incinerators can be operated continuously; cost of operations can be offset by the production of better residue and the utilization of waste heat; and air pollution can be eliminated.

451. Incineration of Municipal Refuse. *1960 American Public Works Association Yearbook*, p. 193.

The author suggests three reasons why incineration may prove the most economical method of refuse disposal in our larger cities: costly hauling to distant sanitary landfills or dumps has been eliminated; the change in quantity and character of municipal refuse has increased the average thermal value of the refuse; and improved incinerator design makes possible a better residue, more efficient utilization of waste heat, and a reduction in air pollution.

MacKnight, Robert J.; Williamson, John E.; Sableski, Joseph J., Jr.; and Dealy, James O.

452. Controlling the Flue-Fed Incinerator. *Journal of the Air Pollution Control Association*, 10:2:103, April 1960.

Describes and compares two satisfactory methods of controlling the flue-fed incinerator. The two methods are: breeching a separate multiple chamber incinerator into the existing flue and converting the existing combustion chamber into a storage bin, and installing an afterburner on the roof and a draft control damper below the first floor charging chute.

Marnet, Hermann; and Street, E. P.

453. Incinerator Plant Designed to Meet Today's Waste Disposal Problems. *Plant Maintenance and Engineering*, 22:2:34, August 1960.

Describes the waste disposal problem at a West Point, Pa., manufacturing plant and the physical features of the modern, stoker-equipped incinerator built for the disposal of the wastes. An extensive study was made to determine the volume, composition, and frequency of the plant's wastes. On the basis of results obtained, the incinerator was designed and constructed.

McAskill, J. D.

454. A Residential Incineration Program. *The American City*, 76:7:98, July 1961.

Describes the program inaugurated in Saskatoon, Saskatchewan, for the installation of residential incinerators to reduce garbage collection and disposal costs.

Meissner, H. G.

455. Available Heat From Incineration. *Power*, 104:5:80, May 1960.

A discussion of the utilization of waste heat from incinerator plants. Heat can be used for low-pressure heating boilers and power generation, but it is generally practical only when it is used nearby.

456. INCINERATOR FURNACE TEMPERATURE. *Journal of the Air Pollution Control Association*, 11:10:479, October 1961.

Recommended procedures and important factors of the design and operation of a refuse incinerator in calculating and maintaining optimum furnace temperature.

457. INCINERATOR FURNACE TEMPERATURE . . . HOW TO CALCULATE AND CONTROL IT. *Combustion*, 33:2:35, August 1961.

Gives procedures and factors of primary importance in the design and operation of a refuse incinerator for the calculation and maintenance of the optimum furnace temperature. Simplifies the procedure to accomplish desired results with a minimum of labor and within commercial limits of accuracy.

O'Connor, C.; and Swinehart, Glenn

458. BAGHOUSE CURES STACK EFFLUENT. *Power Engineering*, 65:5:58, May 1961.

A description of the baghouse which was installed in the Pasadena, Calif., municipal incinerator to reduce stack plume.

Popovich, M.; Northcraft, M.; Boubel, R. W.; and Thornburgh, G. E.

459. *Wood Waste Incineration*. Robert A. Taft Sanitary Engineering Center Technical Report A61-3. Cincinnati: U.S. Department of Health, Education, and Welfare, Public Health Service, 1961. 5 pp.

A study of burning practices, emissions, and reduction of smoke and cinders from tepee wood waste burners. A condensation of *Wood Waste Disposal and Utilization*, Bulletin No. 59, Oregon State Engineering Experiment Station, Corvalis, Oreg., 1958.

Powell, Thomas

460. AIR POLLUTION AND INCINERATION. *Compost Science*, 1:3:35, Autumn 1960.

Inefficient incinerators have made the major contribution to the problem of air pollution. Some cities have adopted codes regulating refuse incineration, and requirements for design and operation of all major types of incinerators have been made. In the future composting may replace incineration as a more productive means of refuse disposal.

Reilly, B. B.

461. INCINERATOR AND SEWAGE TREATMENT PLANT WORK TOGETHER. *Public Works*, 92:7:109, July 1961.

Describes a new incinerator and sewage treatment plant recently constructed in Whitemarsh Township, Pa. Presents data on its performance and some of the problems incurred with the new operation.

Rezabek, Edward

462. CHICAGO MANUFACTURER GETS RID OF EXPENDABLES—ECONOMICALLY! *Plant Maintenance and Engineering*, 22:3:52, September 1960.

A Chicago manufacturer of safety and laminated decorative glass has solved the problem of disposal of once-used shipping crates. A portable, monolithic, refractory lined incinerator has been installed to eliminate the 100–150 bulky crates which accumulate each week. The incinerator will soon have paid for itself by eliminating scavenger service fees.

Rogus, Casimir A.

463. INCINERATION. *Proceedings of the Third Pittsburgh Sanitary Engineering Conference*, p. 19, November 4, 1961.

A discussion of incineration as a means of refuse disposal. Includes the following: (1) the advantages and disadvantages of refuse disposal by incineration; (2) refuse quantities and composition and the effects upon incineration; (3) plant capacity; (4) a description of the function and basic design elements of incinerator components—tipping floors, storage pits, cranes, furnaces, subsidence chambers, residue and fly-ash removal apparatus, exhaust stacks, waste heat, and shredding; (5) a table giving the cost per ton of refuse disposed of by incineration; (6) incinerator construction costs with a table giving the distribution of construction costs for equipment and building; (7) incinerator operation; and (8) maintenance and repairs.

Smellie, J. H.

464. THE UTILIZATION OF WASTE MATERIALS FOR HEAT PRODUCTION. *Smokeless Air*, 32:119:64, Autumn 1961.

A discussion of waste burning, with emphasis upon wood wastes, municipal refuse, and the utilization of waste heat.

Smith, Seymour

465. NEW WAY TO SCRUB INCINERATOR GASES. *Air Engineering*, 2:5:40, May 1960.

A description of a package scrubber for flue-fed incinerators that burn domestic rubbish and garbage in apartment buildings. The scrubber will limit outlet dust emissions and will make incinerators acceptable under air pollution ordinances.

Standley, David; and Dallas, James L.

466. A STUDY OF SOOTFALL. *Sanitalk*, 8:3:1, Fall 1960.

A study of a large sootfall in the Boston, Mass., area in the spring of 1960. Describes in detail procedures used in determining the source of the sootfall and the suspected sources. Considers the extent and distribution of the sootfall, the nature of the material, and meteorological conditions during the sootfall.

Stellwagon, L. H.

467. Calumet Incinerator—Chicago's Second, Nation's Largest. *The American City*, 75:2:96, February 1960.

A discussion of the design elements and performance test results of Chicago's Calumet Incinerator. The 1,200-ton incinerator is the second of four in the city's long-range incinerator construction program.

Stenburg, Robert L.; Hangebrauck, Robert P.; Von Lehmden, Darryl J.; and Rose, Andrew H., Jr.

468. Effects of High Volatile Fuel on Incinerator Effluents. *Journal of the Air Pollution Control Association*, 11:8:376, August 1961.

Describes laboratory combustion tests conducted to evaluate the effects of a high volatile solid fuel on incinerator emissions. The tests demonstrate the difficulty of burning high volatile solid waste materials without making appreciable contributions to atmospheric pollution.

Stenburg, Robert L.; Horsley, Ronald R.; Herrick, Robert A.; and Rose, Andrew H., Jr.

469. Effects of Design and Fuel Moisture on Incinerator Effluents. *Journal of the Air Pollution Control Association*, 10:2:114, April 1960.

A study conducted to determine the effects of fuel moisture content, the amount and distribution of combustion air, and the rate of burning on pollutant emissions from incinerators. Results are discussed with respect to solid contaminants, nitrogen oxides, hydrocarbons, carbon monoxide, smoke and odors. Most pronounced were the findings on the amount and distribution of combustion air. Underfire air appeared to be the variable having the greatest effect on particle emissions. Excess combustion air also produced a significant increase in pounds of total particulate per pound of fuel burned.

Sterling, Morton

470. Air Pollution Control and the Gas Industry. *Journal of the Air Pollution Control Association*, 11:8:354, August 1961.

Thirty-five different model incinerators were evaluated in conjunction with Detroit's new regulations on domestic incinerators. The tests showed that the new multiple-chamber incinerators with gas burners in the secondary chamber produced less smoke, odor, and fly ash than the older types, but required more heat input per pound of waste and took longer to incinerate a unit charge. The author lists 11 modifications of incinerator design that warrant further investigation.

471. Attitudes on the Design of the Flue-Fed Incinerators. *Journal of the Air Pollution Control Association*, 10:2:110, April 1960.

Results from a survey conducted by air pollution control officers and equipment manufacturers. The basic questionnaire contained questions on charging methods, incinerator design, auxiliary burners, fly-ash collection techniques, draft control techniques, and times for burning waste.

Street, E. P.; Fozo, G.; and Copley, M. H.

472. Incinerator Takes 'em All. *Plant Engineering*, 14:8:131, August 1960.

Describes the operation of a commercial incinerator in West Point, Pa.

Taylor, M. G., Jr.

473. You Don't Need a Tall Stack. *The American City*, 76:12:74, December 1961.

A description of the new Winchester, Ky., incinerator. The plant, resembling an office building in appearance and having a single, inconspicuous 20-foot stack, shows that a tall stack is not needed for efficiency in operation.

Trautwein, Frederick W.

474. Better Maintenance for Waste-Heat Boilers at Incinerator. *Public Works*, 91:10:207, October 1960.

Air-driven, long retractable soot blowers have been installed in the waste-heat boilers of the Hempstead, N.Y., incinerator to increase life of the blowers and to provide better cleaning of the boilers.

Tuttle, William N.; and Feldstein, Milton

475. Gas Chromatographic Analysis of Incinerator Effluents. *Journal of the Air Pollution Control Association*, 10:6:427, December 1960.

Describes the apparatus and procedures for gas chromatographic analysis of incinerator effluents. Chromatographic analysis is used to determine the concentration of low molecular weight hydrocarbons in incinerator effluents, thus providing a means for differentiating between incinerators which are well designed and operated and those which are not.

Walsh, George William

476. Air Pollution Deterrents. *Refuse Removal Journal*, 4:3:21, March 1961.

A discussion of three general techniques used to control air contaminants, with emphasis on the control of pollutants from waste incineration and on particulate removal.

477. A Review of Selected Air Pollution Control Developments. *1960 American Public Works Association Yearbook*, p. 198.

See item No. 476.

Whitman, Dana, Jr.

478. Refuse Burner Supplements Town Landfill. *Public Works*, 92:3:117, March 1961.

A description of the physical features, operation, and cost of a refuse burner recently installed at the Newton, N.J., sanitary landfill to burn combustible wastes before burial. The city also passed a new ordinance requiring the separation of combustibles and noncombustibles, an annual $10 license fee for refuse trucks, the covering of all refuse vehicles, and the prohibition of the dumping of materials from out of town.

479. Refuse Burner Supplements Town Landfill. *Public Health News*, 42:5:154, May 1961.

See item No. 478.

Williamson, J. E.; MacKnight, R. J.; and Chass, R. L.

480. Design Standards for Multiple Chamber Incinerators. Part I. *Industrial Water and Wastes*, 6:3:61, May–June 1961.

Part I of a discussion on the standards developed for incinerator design by the Los Angeles Air Pollution Control District. Basic considerations are classification of refuse, process of incineration, principles of combustion for this type of equipment, and design factors.

481. Design Standards for Multiple Chamber Incinerators. Part II. *Industrial Water and Wastes*, 6:4:97, July–August 1961.

Part II of the discussion on standards for incinerator design covers the limitations of the two basic design types (retort and in-line units), the design calculations, and the solution of a sample design problem.

482 Design Standards for Multiple Chamber Incinerators. Part III. *Industrial Water and Wastes*, 6:5:134, September–October 1961.

The final installment of the discussion on standards for incinerator design developed by the Los Angeles Air Pollution Control District. Gives the district's recommendations regarding construction materials and methods of operation. High quality materials are essential for a reasonable and satisfactory operation. This is particularly true in the case of the refractory.

Wills, D. R.; and Blench, G. T.

483. Installation of Small Gas-Fired Incinerators. *Institution of Heating and Ventilating Engineers—Journal*, 28:9:189, September 1960.

Examines flue length, down draft diverters, treated flue pipe, and design data for mechanical extraction relative to adequate ventilation for refuse incinerators.

Young, Jordan J.

484. A New Incinerator was Best. *The American City*, 75:8:183, August 1960.

A description of the new White Plains, N.Y., incinerator plant, including design elements of the furnace, fly-ash removal facilities, and the vacuum cleaning unit. The community compared the relative costs of renovating its old incinerator and building a new one, and decided that a new incinerator would best meet refuse disposal needs.

K. DISPOSAL—Landfilling

American Society of Civil Engineers, Committee on Sanitary Engineering Research

485. A Survey of Sanitary Landfill Practices: Thirtieth Progress Report. *Proceedings of the American Society of Civil Engineers, Journal of the Sanitary Engineering Division*, 87:SA4:65, July 1961.

Data obtained from a survey of 250 agencies operating sanitary landfills. This may be used as a general guide to current sanitary landfill practices.

Anonymous

486. Colored Signs Identify Sanitary Landfills. *The American City*, 75:5:29, May 196

Colored signs at the Birmingham, Ala., sanitary landfills inform passing motorists of the operations there and indicate the city's pride in their refuse disposal sites.

487. Compaction of Refuse and Vehicular Access. *Public Cleansing*, 51:11:563, November 1961.

A discussion of refuse compaction at a sanitary landfill site. The degree of compaction depends upon the eventual use of the land. Compaction depends upon ground pressure exerted by the entire tractor rather than the width of the tractor shoes. Pressure should be exerted evenly over the whole area. Bogged vehicles sometimes present a problem at landfill sites.

488. Disposal of Household Refuse in Disused Pits. *British Waterworks Association Journal*, 43:357:377, June 1961.

A brief summary of a report by the Technical Committee on the Experimental Disposal of House Refuse in Wet and Dry Pits entitled, *Pollution of Water by Tipped Refuse*. See item No. 531.

489. EGHAM—HOME OF WET TIPPING. *Public Cleansing*, 50:8:395, August 1960.

In Egham, England, 90,000 tons of refuse are dumped into a wet pit each year, and an aeration process is used to help reduce smell and pollution.

490. HOLES—A SIMPLE REMEDY FOR A BIG HEADACHE. *The American City*, 75:7:147, July 1960.

Four-inch square holes burned into the center of the track pads solved the problem of trash being compacted in the sprocket openings between track bushings on the crawler tractors used at the sanitary landfills in Orange County, Calif.

491. HOW TO ESTIMATE HOURLY SANITARY LANDFILL COSTS. *Refuse Removal Journal*, 3:3:8, March 1960.

Gives details of the method for estimating landfill costs. Variable influences at each individual site make it impossible to arrive at general figures applicable to several locations. Discusses cost of land, equipment and operating costs, and miscellaneous expenditures. Estimation of operating costs of a $20,000 tractor is given as an illustration.

492. LANDFILL OPERATIONS BY LOS ANGELES COUNTY. *Public Works*, 91:9:122, September 1960.

A description of the location, size, annual percent of volume used, operation, and cost of the sanitary landfill in Los Angeles County, Calif. Operations include three ramp landfill sites and one transfer station. The landfills use a unique credit card system for agencies delivering refuse. The county provides only refuse disposal services; refuse collection is the job of local agencies.

493. LANDFILLS REPLACE JERSEY DUMPS. *Public Health Reports*, 75:3:220, March 1960.

A summary of an APHA Conference report which discusses the increase in sanitary landfill disposal under a new law banishing dumps and establishing a sanitary code for landfills.

494. PRIVATE CONTRACTOR WORKS LANDFILL WITH PRECISION ON PEORIA CONTRACT. *The Street Cleaner*, 45 7:4, July 1961.

A short account of the operation of a sanitary landfill owned by a private contractor in Peoria, Ill.

495. REFUSE HANDLING COSTS TOO HIGH? *The American City*, 75:3:9, March 1960.

Skillful location of the sanitary landfill in Laredo, Tex., has saved money by reducing haul distances and has converted wastelands into a public playground.

496. THE SANITARY FILL—HOW IT OPERATES. PART I. *The American City*, 76:2:84, February 1961.

A discussion of why the sanitary landfill is the only practical alternative to incineration for refuse disposal in the United States. Presents a summary of significant operating details and other pertinent data on some of the active sanitary fills in the United States (Arizona to Maine).

497. THE SANITARY FILL—HOW IT OPERATES. PART II. *The American City*, 76:3:98, March 1961.

A discussion of the principles involved in establishing and operating a sanitary landfill. Includes selection of site, operation of the landfill, costs involved, equipment needed, future use of the reclaimed land, and refuse decomposition at the fill. Presents a summary of operations at additional landfill sites (Maine to Tennessee).

498. THE SANITARY FILL—HOW IT OPERATES. PART III. *The American City*, 76:4:84, April 1961.

Describes the trench, area, and ramp sanitary landfilling methods. Summarizes operations at the remaining active landfill sites in the United States (Tennessee to Wisconsin).

499. SANITARY FILL RECLAIMS VALUABLE LAND. *Public Works*, 91:4:156, April 1960.

When the State passed a law prohibiting open dumps, Bordentown, N.J., initiated a program for converting its refuse dump into a sanitary landfill. The new landfill has now been completed and serves 16,000 people in the immediate vicinity.

500. SANITARY LANDFILL IS A MONEY MAKER. *The American City*, 75:10:23, October 1960.

Replacement of the open dump by a sanitary landfill in Highland Park, Ill., has rid the area of a public nuisance and hazard, and has produced an annual income for the town of $48,000 from nearby communities who are also using the site.

501. SIZE NO DETERRENT TO GOOD REFUSE DISPOSAL. *The American City*, 75:4:47, April 1960.

Describes refuse disposal operations in Farmville, Va. The community, whose population is only 4,700, operates a 13-acre sanitary landfill with two trucks hauling an average of 27 tons of packed refuse to the site each day.

502. SPACE DEODORIZERS WIPE OUT NAUSEATING STENCH. *The American City*, 75:1:37, January 1960.

Space deodorizers set up at an Atlanta, Ga., construction site put an end to the unbearable odors which arose when an old landfill was unearthed.

Bickerton, Reece I.

503. Earthmoving Equipment Kept Busy. *The American City*, 75:12:101, December 1960.

When work slacks off at the Ocala, Fla., sanitary landfill, the tractors and scraper are put to work on another earthmoving assignment such as constructing playgrounds, cleaning out basins, building or improving city streets, mining limerock, and feeding the crusher.

Bjornson, Bayard F.; and Bogue, Malen D.

504. Keeping a Sanitary Landfill Sanitary. *Public Works*, 92:9:112, September 1961.

A discussion of problems common to sanitary landfill operations and recommended solutions. It is important that the landfill be planned as an engineering project, that the public realize the difference betwen an open dump and a sanitary landfill, and that the fill be operated on a high level of sanitation by competent, trained personnel.

Black, Ralph J.

505. Refuse Disposal Standards and Regulations. *1961 American Public Works Association Yearbook*, p. 233.

See item No. 506.

506. Suggested Landfill Standards and Methods. *Refuse Removal Journal*, 4:10:10, October 1961.

Thirty-four items proposing standards and procedures for constructing and operating a sanitary landfill.

Bowerman, F. R.

507. L.A. Santan District Adopts Pay-as-You-Dump Policy. *American Public Works Association News Letter*, 28:8:11, August 1961.

In order to have completely self-supporting sanitary landfills, the Los Angeles County Sanitation District has been operating its landfills on a pay-as-you-go basis. This has the advantage of keeping refuse disposal expenditures off the tax roll, as well as providing disposal facilities at equal costs to everyone. Scales were installed at all landfills, and charges are made on a tonnage basis.

Boyce, Garry

508. Multi-Purpose Tractor Chops Cost Spiral. *The American City*, 75:1:94, January 1960.

A one-yard, rubber-tired tractor shovel, that at first glance appeared too expensive, provided a $50 a week savings and increased production for the village of Pewaukee, Wis. Among the several uses of the tractor were operation of the sanitary landfill and cleaning of the gutters.

Bradley, C. L.

509. Operating Sanitary Landfills During Extremely Cold Weather. *Public Works*, 91:11:153, November 1960.

A brief account of the installation of sanitary landfills in several North Dakota communities. Discusses the basic criteria for those communities that wish to convert their open dumps into landfills.

California State Water Pollution Control Board

510. *Effects of Refuse Dumps on Ground Water Quality.* California State Water Pollution Control Board Publication No. 24. Sacramento: California State Printing Office, August 1961. 107 pp.

Discusses in detail the principal processes involved in ground water pollution by refuse dumps. Chapters are devoted to vertical water movement, decomposition processes, gas production and movement, leaching, and travel of pollution. Recommends a series of research projects to establish appropriate requirements for refuse dumping where ground water contamination can occur.

Canadian Municipal Utilities Staff

511. Metro Toronto Landfill Creates Many New Parks. *Canadian Municipal Utilities*, 99:9:28, September 1961.

A detailed description of the land improvement operation now in effect in Toronto, Canada. The program is creating new park lands and green areas from old swamps and other waste lands, and at the same time is providing long-term disposal of city refuse, all at no cost to the citizens.

Casey, William F.

512. Landfill Provides Garage Site. *The American City*, 76:7:25, July 1961.

A 200-acre sanitary landfill in Atlantic City, N.J., will soon be the site for a public works and public safety department garage and a boat yard.

Deasy, George F.; and Griess, Phyllis R.

513. Strip Pits and the Sanitary Landfill. *Refuse Removal Journal*, 4:6:17, June 1961.

Abandoned bituminous coal strip pits in western and central Pennsylvania should be used as sanitary landfill sites for area refuse disposal. The strip pits are accessible to highly populated areas, and it has been estimated that over a period of 187 years they could provide disposal facilities for 4-million pepole. Utilization of the abandoned pits would ease the financial burden of waste disposal, increase standards of sanitation, and remove ugly blemishes from the earth.

Dunn, Lewis O.

514. Town and Village Teamwork. *The American City*, 76:5:108, May 1961.

The sharing of a 50-acre sanitary landfill has solved the refuse disposal problems for the communities of Glenville and Scotia, N.Y.

Dunn, Walter L.

515. Storm Drainage and Gas Burning at a Refuse Disposal Site. *Civil Engineering*, 30:8:68, August 1960.

The problem of storm drainage has been solved at a Seattle, Wash., refuse disposal site with the use of large French drains which were built in as refuse was being deposited. Specially constructed inlets had to be attached to these large underdrains in order to allow for controlled burning of the gases which collected in them. A description of the drainage system, with photographs, and a schematic profile are included.

Eliot, George Fielding

516. Garbage is a Nasty Word, But . . . *Suburbia Today*, May 1961.

Discusses the problem of refuse disposal and explains two methods of getting rid of the wastes—sanitary landfilling and incineration. Household refuse is accumulating at a rate of 2¼ pounds per inhabitant for each 24-hour period. Sanitary landfilling is an attractive and inexpensive method of disposing of these wastes, but zoning laws, rising land values, and opposition from residents tend to limit the availability of land. Some believe that incineration provides the only feasible long-term solution, but it is expensive and creates an air pollution problem.

[illegible], A. A.

517. Resistant Flies at Refuse Tips. *Public Cleansing*, 50:7:362, July 1960.

Discusses fly problems at the refuse tip. Makes the following recommendations for the prevention of fly infestation: (1) cover the tip surface with a continuous layer of earth, except for the working face; (2) treat the covering material and surrounding ground with an insecticide having residual toxicity; and (3) treat the working surface with insecticide at the end of each day. Also makes recommendations for the use of insecticides.

Hiller, J. R.

518. County Runs Economical Landfills. *Public Works*, 92:8:109, August 1961.

Explains refuse disposal operations at the four landfills and 28 open-burning dumps in San Bernadino County, Calif. Annual refuse disposal costs in this county average $0.72 per capita. Low disposal costs are attributed to consolidating city-county efforts, placing the disposal program under the county highway department, locating landfill sites to assure sufficient volume, and using reliable, heavy-duty tractors to handle large volumes efficiently.

Jenkins, Joel

519. One Machine—Many Jobs. *The American City*, 75:9:37, September 1960.

A newly purchased tractor with a 1-yard bucket will handle landfill operations, land clearance, truck loading, and snow removal for Lower Penns-Neck Township, N.J.

McRae, Neal

520. Sanitary Landfill Proven Under Fire. *The American City*, 76:5:94, May 1961.

Describes the way in which the city of Birmingham, Ala., reopened two old dump sites as sanitary landfills despite preliminary opposition by area residents. Gives tips on preparing and operating a landfill which Birmingham city officials found to be valuable.

Michaels, Abraham

521. Sanitary Landfill. *Proceedings of the Third Pittsburgh Sanitary Engineering Conference*, p. 9, November 4, 1961.

A discussion of sanitary landfilling as a means of refuse disposal. Includes: (1) the historical development of sanitary landfilling; (2) a brief description of the area, ramp, and trench methods of operation; (3) public health criteria for landfills, and important considerations in establishing landfills to meet these criteria; (4) some of the landfill regulations adopted by the city of Philadelphia for establishing practical definitions and guidelines to operations; and (5) landfill operating costs.

Morris, Willard

522. Burning Helps Conserve Landfill Area. *Public Works*, 92:9:215, September 1961.

Describes operations, costs, and equipment at the Sedalia, Mo., landfill. Scarcity of additional suitable locations has made it necessary to conserve the present landfill area by burning the refuse before covering. Other advantages claimed for this practice are controlling the odor and rat nuisances.

Myers, Wilson J.

523. Sanitary Landfill Cost and Equipment Factors. *Refuse Removal Journal*, 3:2:8, February 1960.

A study of refuse service in Canton, Ohio, reveals that the best means of refuse disposal is the sanitary landfill. A survey of refuse operations in other cities reveals interesting facts about landfill practices and collection equipment.

Nickerson, Herbert D.

524. Selection of Sanitary Landfill Sites. *Sanitalk*, 9:2:9, Spring 1961.

A brief comparison of an open dump and a sanitary landfill. Discusses planning factors which affect the sanitary and economic operation of a landfill. These factors include design, topographical maps, geology, cover material, access roads, and groundwater pollution. Gives an example of foul drainage which created objectionable conditions in a landfill.

Perkins, C. E.

525. Cooperative Arrangement Provides Glendale Area With Refuse Disposal Site and Park. *Western City*, 36:12:22, December 1960.

The city of Glendale, Calif., has initiated a project which will provide low cost refuse disposal and at the same time meet the need for additional parks and recreation facilities. Scholl Canyon, located within the city limits, will be used as the site for a sanitary landfill, and it is hoped that eventually this hilly land will be leveled off for the building of recreational areas. The article discusses the preliminary planning and negotiations, special problems incurred, and the engineering and economic aspects of the project.

526. Cooperative Landfill—Park Project Combines Services of Seven Jurisdictions. *Western City*, 37:7:47, July 1961.

A brief report on the new land reclamation and park development project in Glendale, Calif. The project will provide low-cost refuse disposal for area communities, will produce new level land for park purposes, and will yield royalties from dumping sufficient to build recreational facilities on the land. The most significant part of the project, however, is that it demonstrates what can be accomplished by a high degree of intergovernmental cooperation.

527. A Package-Deal Refuse Program. *The American City*, 75:12:88, December 1960.

A discussion of the "package-deal" refuse disposal and recreational development program in Glendale, Calif., and the extraordinary degree of interjurisdictional cooperation which was needed to initiate the program. Scholl Canyon, located within the Glendale city limits, will be used as the site for recreational facilities after it is filled in with the city's refuse. Huge savings in refuse disposal costs will be realized, valuable land will be reclaimed, and income from dumping fees will be collected to finance the recreational facilities.

Rogus, C. A.

528. Use of Completed Sanitary Landfill Sites. *Public Works*, 91:1:139, January 1960.

A brief appraisal of some of the problems involved in the use of completed landfill sites. Some of the problems are gas emissions, odor nuisances, shrinkage, rodents and flies, fire hazards, and surface and underground water pollution. With proper controls, however, these problems can be eliminated.

Stone, Ralph; and Merz, Robert C.

529. Scientific Analysis of Sanitary Landfills. *1961 American Public Works Association Yearbook*, p. 250.

Describes two studies—a postal survey of several hundred landfill operations, and an analysis of a test landfill. The results of the landfill survey are summarized. In the test landfill, six separate cells were constructed under varied conditions of moisture content, compaction, and aeration. The authors conclude that a scientifically planned, engineered, and operated landfill can result in substantial savings over good normal practice.

530. Scientific Analysis of Sanitary Landfills. *Refuse Removal Journal*, 4:12:15, December 1961.

See item No. 529.

Technical Committee on the Experimental Disposal of House Refuse in Wet and Dry Pits

531. *Pollution of Water by Tipped Refuse.* London: Her Majesty's Stationery Office, 1961. 141 pp.

A report on experiments concerning the risk of polluting ground water by tipping house refuse (1) where percolate from it has access to the ground water, and (2) directly into water communicating with ground water. Some of the results obtained were: (1) the amount of pollution in rainfall after percolating through controlled tip was considerable; (2) the rainfall underwent purification, however, during its subsequent passage through sand and gravel; and (3) there was considerable pollution arising through the tipping of refuse into water. The experiment in general provides fundamental knowledge which should be of value in the selection of satisfactory tipping sites.

Thomson, Pat

532. Another County Operates a Sanitary Landfill. *Public Works*, 91:3:125, March 1960.

Describes the conversion of an unorganized and unsanitary refuse disposal site into a sanitary landfill in Douglas County, Wash.

L. DISPOSAL—Salvage

Anonymous

533. Paper Handling . . . Made Easier. *Public Cleansing*, 51:10:513, October 1961.

Improvements in paper-handling operations by the Sunderland Cleansing Department have increased waste-paper output from 100 to 250 tons per month

and reduced the number of balers from 14 to 6. Improvements include greater attention to detail, close personal contact with any business of reasonable salvage potential, the building of a new garage, the conversion of an old garage to house all salvage activities, and new paper-handling equipment.

534. Simple but Successful. *Public Cleansing*, 51:1:39, January 1961.

A description of a paper-sorting plant which salvages 1,500 tons of wastepaper annually. Plant operations include recovering, sorting, baling, and selling the paper to paper mills for processing.

535. Waste or Wealth? *Public Cleansing*, 51.4:182, April 1961.

Discusses the possible utilization of negligently discarded waste materials such as plant waste, grass cuttings, wastepaper, bottles, and cans.

Brown, Clement

536. Waste Recovery Pays—Even in Prosperity. *Engineering*, 190:4931:539, October 21, 1960.

An evaluation of industrial and municipal wastes—how they can be recovered and used, and the economics involved.

Higginson, A. E.

537. Riches Are Recovered From Urban Refuse. *Engineering*, 190:4931:544, October 21, 1960.

A report on salvage operations in Great Britain. Describes the highly mechanized salvage processes at two large British disposal works.

538. The Salvage Potential of Domestic Refuse. *Public Cleansing*, 51:2:81, February 1961.

An extensive report on the salvage potential of domestic refuse and its effect; the sorting, handling, marketing, and utilization of salvage material; and the question of whether kitchen waste could be salvaged and used. Contains a thorough analysis of refuse and factors affecting future changes in its composition.

Muckelroy, E. F.

539. Sanitary-Landfill Salvage Nets $11,639. *The American City*, 76:9:31, September 1961.

Discusses the sale of salvage recovered from a sanitary landfill in El Paso, Tex. Includes a breakdown of the salvage into the different types of material and gives the revenue made from the sale of each type.

Stirrup, Frank

540. Salvage Collection "Par Excellence". *Public Cleansing*, 51:1:13, January 1961.

A description of an efficient salvage collection vehicle. The unique feature is the rotating cylindrical container between the cab and body of the vehicle in which the salvage is placed.

M. DISPOSAL—Radioactive Wastes

Anonymous

541. Disposal of Radioactive Waste. *Texas Health Bulletin*, 14:10:7, December 1961.

Two deep-sea sites off the Pacific Coast have been designated as disposal areas for radioactive waste. Surveys of these areas have recently been made to obtain all information possible about their radioactive levels. Methods and results of the surveys are described.

542. Disposal of Radioactive Waste in Edinburgh. *Public Cleansing*, 50:3:115, March 1960.

Describes procedures for storing and disposing of radioactive waste from Edinburgh University.

543. How GE's APED Cut Contaminated Waste Disposal by 75%. *Plant Maintenance and Engineering*, 22:5:26, November 1960.

A new gas-fired incinerator at an atomic fuel manufacturing plant in San Jose, Calif., has cut contaminated waste disposal expenses by 75 percent. Previous to this time, solid contaminated wastes were encased in concrete containers and dumped in special burial grounds. The incinerator paid for itself in the first month of operation.

544. Nuclear Graveyards. *Engineering*, 190:4931:548, October 21, 1960.

A discussion of radioactive waste disposal. Presents the basic considerations involved, the principles of waste management, and several disposal methods used today—sea disposal, storage tanks, and ground dispersal.

545. Nuclear Waste Problem Increases in Gravity. *Refuse Removal Journal*, 3:7:12, July 1960.

Present methods for the disposal of radioactive waste are storing and dumping. Neither is considered to be adequate, however, and other means proposed for the future include conversion into usable radioisotopes and even disposal in space.

Bowen, B. M.; Selby, J. M.; and Edgerton, J. H.

546. Radioactive Waste Disposal at the Georgia Nuclear Laboratory. *American Industrial Hygiene Association Journal*, 22:2:119, April 1961.

A brief discussion of the disposal of radioactive solid wastes and contaminated articles. High-level wastes are packaged and shipped elsewhere for disposal; low-level wastes are placed in drums for storage. Investigations are being conducted into the possibility of disposal by ground burial.

Brown, Robert M.; and Pritchard, Donald W.

547. Radioactive Wastes in the Marine Environment. *American Journal of Public Health*, 51:11:1647, November 1961.

Discusses these aspects of radioactive waste disposal in the sea: reasons for using the sea as the disposal site; present and potential sources of radioactive materials in the sea; classification of activity levels of waste; assimilation and dispersal mechanisms; effects upon the marine food chain cycle; preevaluation of the safety of any specific disposal operation; and public health significance and responsibility.

Collins, John C.—Editor

548. "The Disposal of Radioactive Solid Wastes" (Chapter 9). *Radioactive Wastes, Their Treatment and Disposal.* New York: John Wiley & Sons, Inc., 1960. 239 pp.

A general discussion of radioactive solid waste disposal. Includes: contamination prevention; storage; ground disposal—burial, unprotected and protected material, mine disposal; sea dumping; and volume reduction—compression, incineration, melting.

Enders, John W.

549. Radioactive Trash Disposal at Los Alamos. *American Industrial Hygiene Association Journal*, 21:2:151, April 1960.

A discussion of the methods used for solid radioactive waste disposal at Los Alamos Scientific Laboratory, Los Alamos, N. Mex. Includes the origin and nature of the contaminated trash, methods of packaging and transportation, description of the disposal site, and costs of the operation.

Griswold, Wesley S.

550. Getting Rid of Radioactive Rubbish. *Popular Science*, 177:3:90, September 1960.

Discusses the collection and disposal of radioactive rubbish by a private firm under government contract. The "hot" wastes are collected in steel drums, mixed with concrete, and dumped into the ocean.

Lavetter, Victor E.

551. An Incinerator for Wastes Containing Microcurie Amounts of Carbon-14. *American Industrial Hygiene Association Journal*, 22:6:485, December 1961.

Description of a small rotating drum incinerator designed for the disposal of wastes containing microcurie amounts of radiocarbon. Flue gases from the special incinerator mix with those from a large municipal incinerator and discharge through a 150-foot chimney after the mixture passes through a wet fly-ash collector.

McNeese, W. D.; and Maraman, W. J.

552. Incinerator for Radioactive Residue. *Industrial and Engineering Chemistry*, 52:2:79A, February 1960.

Description of an incinerator unit designed to burn organic material contaminated with plutonium to a more recoverable form without loss of the plutonium.

Thorburn, R. C.; and Chandler, R. J.

553. An Incinerator for Uranium Contaminated Wastes. *Industrial Water and Wastes*, 6:2:46, March–April 1961.

A gas-fired incinerator provided with exhaust gas filters and other safeguards has reduced the volume of low-uranium-content wastes for disposal and has provided substantial savings in disposal costs.

554. Incinerator Reduces Volume of U-Contaminated Paper. *Nucleonics*, 19:5:86, May 1961.

A description of an incinerator system used to burn paper, polyethylene bags, and disposable paper work clothes contaminated by uranium oxide. The incinerator reduces waste volume by a factor of 150 and cuts disposal costs by 75 percent.

N. STREET CLEANING

Anderson, Robert L.

555. Leaf Collection Problem. *American Public Works Association News Letter*, 27:8:2, August 1960.

Presents results of a survey of 15 communities in the Chicago suburban area on municipal leaf collection from private property. Some important observations were: (1) in order to have a no-burning regulation, a complete removal service must be provided by the municipality; (2) this service will involve substantial additional expense, require considerable equipment, and throw a heavy, concentrated load on the labor force; and (3) the available equipment is not satisfactory for handling both wet and dry leaves.

Anonymous

556. In Albany, Drivers Heed Sweeper Ban on Parking—or Else. *The Street Cleaner.* 45:12:3, December 1961.

Street sweeping in Albany, N.Y., is facilitated by the strict enforcement of parking bans.

557. Big Sucker Helps Leaf Problem. *Sweep*, 2:3:5, Autumn 1960.

A description, complete with diagrammatical sketch, of a new special truck equipped with a leaf-gathering unit. The unique leaf collector was developed by the New York City Sanitation Department and a private manufacturer.

558. Clean Streets Cut Sewer Maintenance Costs. *Street Engineering*, 6:12:34, December 1961.

The use of a power sweeper to clean streets has reduced storm sewer-clogging emergencies by 70 percent in Baldwin, Pa.

559. Home-Made Crack Sweeper. *Street Engineering*, 6:10:12, October 1961.

Describes a truck-mounted, street-crack sweeper invented by two city foremen. This sweeper is saving the city of Phoenix, Ariz., $20,000–$35,000 annually.

560. Ideas—and Tools—Lick Street Cleaning Woes. *The Street Cleaner*, 44:12:2, December 1960.

A brief description of street cleaning in Ann Arbor, Mich. Leaves, the weather, and parked vehicles present special cleaning problems.

561. Leaf Collection for 70% Less. *The American City*, 75:11:35, November 1960.

Use of a new vacuum leaf collector has reduced the leaf collection crew in Philipsburg, Pa., from 10 to 3. This reduction has produced an annual savings of $1,120.

562. Leaf Removal in Portland, Oregon. *Compost Science*, 1:4:24, Winter 1961.

Discusses the method of leaf disposal used in Portland, Oreg. Collected leaves are distributed to those residents who want them for composting and fertilizing.

563. Mechanized Broom Rebuilding Backs Sweeper Schedule. *Street Engineering*, 5:9:22, September 1960.

A power broom-rebuilding machine operated by an expert broom man is an important factor in the avoidance of sweeper downtime during work hours in Youngstown, Ohio.

564. One Method for Getting Sweeper Maintenance. *The Street Cleaner*, 45:2:1, February 1961.

Solid indoctrination of operators in their responsibilities and insistence on regular maintenance of vehicles are the keys to excellent street-cleaning operations in Waukegan, Ill.

565. Power Sweeping Offers Business to Contractors. *Refuse Removal Journal*, 3:3:20, March 1960.

Private contractors could increase their business by providing street-sweeping services for the small communities that do not have municipally owned sweepers, for airports, for shopping centers, and for outdoor recreational areas.

566. San Diego Systemizes Its Street Sweeping Program. *The Street Cleaner*, 45:3:5, March 1961.

A review of street-cleaning operations in San Diego, Calif.

567. South Bend Vacuums for Light Litter. *The American City*, 76:9:189, September 1961.

A description of the new vacuum vehicle used in South Bend, Ind., to clean up light litter from the streets. The vacuum releases a heavier sweeper for other duty and cuts maintenance costs on this job considerably.

568. Street Sweeping. *Public Cleansing*, 50:1:27, January 1960.

A brief discussion of the change in British street-sweeping practices. Horse-drawn sweepers were gradually replaced by mechanical orderlies.

569. Street Vacuuming Made Possible by Flexible Tubing. *Refuse Removal Journal*, 3:7:16, July 1960.

Large vacuums equipped with flexible tubing suction devices are providing labor- and money-saving leaf collection services in several cities.

570. Suburb Attacks Dust Problem With Vacuum-Sweeping. *Street Engineering*, 5:12:34, December 1960.

A vacuum-sweeping program has helped keep streets free from the dust and debris of new construction projects in Warrensville Heights, a suburb of Cleveland, Ohio.

571. Sweeper Maintenance Gets Top Priority. *The Street Cleaner*, 44:1:1, January 1960.

Describes street-cleaning operations in Rockford, Ill., with emphasis upon the excellent care and maintenance given the sweeping vehicles. Maintenance procedures include a daily check of the vehicles and a 150-mile servicing every 3 days.

572. Sweeper to Pay Its Way in Three Years. *The American City*, 75:10:95, October 1960.

Purchase of a mechanized street sweeper has produced a saving of $3,000 in labor costs and greater coverage of streets in Philipsburg, Pa.

573. This City Works Hard at Efficient Sweepings Disposal. *The Street Cleaner*, 45:10:3, October 1961.

Describes the disposal of street sweepings in La-Porte, Ind. Sound disposal practices determine in large measure the success with which a sweeper is used.

574. This Town Sweeps Its Leaves Every Autumn. *The Street Cleaner*, 45:11:1, November 1961.

Describes leaf collection and disposal in Janesville, Wis. Leaf collection is accomplished by street sweepers; the secret is having enough machines to get streets swept before leaves can accumulate. The collected leaves are used to insulate the construction on storm sewer ditches during the winter.

575. West Milwaukee Meets Challenge With Education, Regular Sweeping. *The Street Cleaner*, 45:7:1, July 1961.

West Milwaukee, Wis., sanitation officials attribute their clean community to an unusual amount of civic pride, education, and enforcement of the habit of tidiness, and a good street-cleaning program.

576. Women are Street Cleaners in the Soviet Plan. *The Street Cleaner*, 44:4:3, April 1960.

See item No. 580.

Bailey, R. E.

577. Street Cleaning Means Flushing Too. *The American City*, 76:6:49, June 1961.

A brief discussion of street cleaning in Jackson, Tenn.

Baum, Vincent H.

578. A Clean Sweep for Rye. *The American City*, 76:4:27, April 1961.

Briefly discusses street cleaning in Rye, N.Y. A new machine sweeper has helped keep the community's streets ultra clean.

Bien, E. Fredrick

579. "Do-It-Yourself" Street Sweeping Proves Lowest in Cost. *Public Works*, 91:8:104, August 1960.

A study of street-sweeping costs by the City Council of Norwalk, Calif., indicated that a city-owned and operated service would be the most economical. On the basis of these findings, the city conducted its own street-sweeping program, and the results of the study were later proved to be correct.

Blackburn, Alderman Richard

580. Teams of Women Keep Soviet Streets Clean. *Public Cleansing*, 50:1:42, January 1960.

Discusses observations of sanitary conditions in Moscow and Leningrad. It was observed that litter bans are placed every few yards along walkways, that the Soviet women perform the street-cleaning operations, and that there is a general self-discipline of the people against littering.

Bowes, William A.; and Rosenthal, L. H.

581. Keep Streets Clean Mechanically. *The American City*, 75:9:100, September 1960.

A brief discussion of street-cleaning operations and equipment in Portland, Oreg. A completely mechanized force has made possible an orderly schedule of street cleaning and a saving of 60 full-time employees.

Carozza, Michael J.

582. Methods and Equipment for Street Sanitation. *Refuse Removal Journal*, 3:4:20, April 1960.

The introduction of plastic rear-sweeping brooms has increased broom life from 150 to 1,800 curb miles and has substantially reduced costs. Some cities make contractual agreements for specialized sweeping. Parked vehicles constitute sweeping problems in many areas. Street flushing is currently being studied in Fresno, Calif., as a complement to sweeping.

Dyment, Robert

583. Street Sweeping is a Big Job for Cities. *Public Works*, 92:11:126, November 1961.

Describes street-sweeping operations in such cities as Poughkeepsie, Miami, St. Louis, St. Paul, Tulsa, and Spokane. A recent survey of municipal street sweeping has revealed a trend toward mechanization and a problem of parked cars.

Farley, C. E.

584. Street Cleaning Starts Strong. *The American City*, 76:8:96, August 1961.

Describes street cleaning in Baltimore, Md. Includes organization of the street-cleaning department, cleaning procedures, equipment used, special problems incurred in operations, and cost data.

Gailey, Carl V.

585. Cincinnati's Methods of Modern Street Cleaning. *Refuse Removal Journal*, 4:1:18, January 1961.

Describes the organization of street-cleaning operations, equipment used, the importance of personnel, seasonal operations, and the problems of parked vehicles and littering.

586. Modern Street Cleaning. *Public Works*, 92:12:125, December 1961.

A discussion of the street-cleaning organization and operation in Cincinnati, Ohio. Reports on seasonal operations and the problems of parked vehicles and littering. Costs of the street-cleaning operation are given.

587. Modern Street Cleaning Methods. *1960 American Public Works Association Yearbook*, p. 98.

See item No. 585.

588. Modern Street Cleaning Methods. *Street Engineering*, 5:12:10, December 1960.

A report on modern street-cleaning methods used in Cincinnati, Ohio. Describes the organization and operation of the Highway Maintenance Division of the Public Works Department, the leaf removal program, the street parking problems, and litter abatement in the city, and presents the 1959 cost data of the street-cleaning program.

Jones, Russell D.

589. Alleys are Clean in Santa Monica. *The American City*, 76:6:49, June 1961.

Santa Monica, Calif., has recently inaugurated a program for sweeping its 63 miles of alleys.

Kirby, William D.

590. A Change in Brooms Cuts Sweeping Costs. *The American City*, 76:5:33, May 1961.

A change from hickory fiber to wire sweeping brooms has reduced the number of manhours involved and the cost of the street-sweeping service in Decatur, Ill.

Liebman, Henry

591. New York City: Refuse Collection and Street Sanitation. *Street Engineering*, 5:8:24, August 1960.

A detailed description of the organization of the New York City Sanitation Department, and several of the programs which the department conducts. These programs include the special collection of bulky items, the systematic cleaning of littered lots, the machine-cleaning of streets, and the post-parade cleanups.

Lowdermilk, F. M.

592. Cleaner Streets at Low Cost. *The American City*, 75:7:165, July 1960.

Naples, Fla., greatly reduced manhours in their street-cleaning program with the installation of a new mechanical sweeper and vacuum leaf-collecting unit.

Lumpkin, B. E.

593. Two Mechanized Ambassadors of Good-Will. *The American City*, 75:2:108, February 1960.

A leaf collector and a limb-and-brush chipper have promoted good public relations in Athens, Ga. The chipper saves time in both collecting and hauling brush. The leaf collector reduces fire hazards by collecting the leaves along the curbs, and frees the street sweepers for more work by hauling the street sweepings to the disposal site.

Mammel, Frederick A.

594. Some Things That Have Helped Our Street Cleaning. *Street Engineering*, 5:6:12, June 1960.

A discussion of street-cleaning operations in Ann Arbor, Mich. A vacuum leaf picker-shredder, a late-night parking ban, and good route management of sweepers have helped make the operation an efficient one.

Muckelroy, E. F.

595. Non-Elevator Sweeper Handles "Blow Sand". *The American City*, 75:11:161, November 1960.

The El Paso, Tex., Sanitation Department is using nonelevator street sweepers equipped with sealed hoppers to handle "blow sand" on the city streets. The sweepers are also installed with devices to record daily sweeper operation.

Pratt, Lawrence C.

596. Low Budget Street Sweeping. *Street Engineering*, 6:9:12, September 1961.

A report on the low budget street-cleaning operations in Minneapolis, Minn. Much care and planning must be exercised to keep the operations as efficient as possible.

Rheinfrank, William J.

597. Management of Street Sanitation Operations. *1961 American Public Works Association Yearbook*, p. 261.

See item No. 598.

598. Management of Street Sanitation Operations. *Refuse Removal Journal*, 4:11:16, November 1961.

A discussion of street-cleaning operations in Milwaukee, Wis. A new ordinance was recently passed in this city to eliminate littering and mudtracking by vehicles, two of its biggest street sanitation problems.

599. Vacuum Loader Speeds Street Cleaning. *Public Works*, 92:5:125, May 1961.

A detailed description of two high-pressure vacuum machines used in Milwaukee, Wis., to provide a more efficient street-cleaning operation. These machines handle the output from the street sweepers and allow the waste collection trucks, previously employed for the job, to remain on their waste collection routes. Other uses of the vacuum machines include leaf pickup and the emptying of ice-control sandboxes.

Sarratt, Art

600. Checkerboard Street Cleaning Program. *The American City*, 75:12:20, December 1960.

Describes street-cleaning operations in Council Bluffs, Iowa. Machines clean streets in eight square block areas and empty their hoppers at one intersection. The collected debris is then hauled to the landfill where it is used as a cover material.

Sauer, R. P.

601. Street Cleaning in a 24-Hour-A-Day City. *The American City*, 76:7:93, July 1961.

Discusses street-sweeping operations and equipment in Las Vegas, Nev., and the unusual problems encountered in performing this service.

Seeley, M. J.

602. Planning a Successful Leaf Removal Program. *Public Works* 92:10:127, October 1961.

Summarizes the complete operation and equipment used in an intensive leaf collection program in Ridgewood, N.J. One cubic yard of leaves per capita was removed. This reduced chances of a fire hazard and the thick smoke caused by public burning.

O. LITTER

Albert, Phoebe

603. Litter-Ally Speaking. *Parks and Recreation*, 43:5:262, May 1960.

A discussion of the litter problem and possible solutions. Emphasizes three basic elements in the fight against highway litter: (1) highway department personnel; (2) highway trash disposal facilities; and (3) the motoring public. Describes Maryland's antilitter tactics in these categories.

Anonymous

604. Albuquerque's Anti-Litter Campaign Helps Revive Downtown Business Area. *Western City*, 37:11:54, November 1961.

A report on the antilitter campaign in the Albuquerque, N. Mex., business district. The campaign consists of the issuance of citations to violators, the provision of sidewalk trash receptacles and ash trays, attacks on the pigeon nuisance, and antilitter posters.

605. Chicago Uses Fluorescent Color for Litter Baskets and Vehicles. *Public Works*, 92:8:142, August 1961.

Litter baskets in Chicago, Ill., have been sprayed with fluorescent paints, which are much brighter than conventional paints. Estimated results were a 100-percent increase in litter collected and a 50-percent decrease in labor needed to keep the city litter-free.

606. Cincinnati Hits Litterbugs With Education, Discipline. *The Street Cleaner*, 44:9:2, September 1960.

A brief description of the antilitter program in Cincinnati, Ohio. (See item No. 627.)

607. Containers Solve Butt Problem for Republic. *Refuse Removal Journal*, 3:9:12, September 1960.

Fire hazards and unsightliness are avoided at an aviation plant by the use of special receptacles for cigarette ends. The containers are 5-gallon, 26-gage steel, covered with a striking red, white, and black silk-screened design.

608. Dearborn, Michigan, Fights Trash-Tossers With the Law. *The Street Cleaner*, 44:2:2, February 1960.

Describes a Dearborn, Mich., ordinance regulating the distribution of handbills and advertising media, and an antilitter reward system offering $50 to citizens who provide tips leading to the apprehension of trash-tossers.

609. $50 Reward for Snitching on Litterbugs. *The American City*, 75:2:46, February 1960.

A Dearborn, Mich., ordinance calls for a $100 fine for littering and provides a $50 reward for any citizen who gives a tip leading to the apprehension of a trash-tosser.

610. Gimmicks for a Cleaner City. *American Public Works Association News Letter*, 27:6:14, June 1960.

Balloons bearing the slogan "Help Keep Richmond Clean," a talking waste basket, new white-wing carts, and a display of freshly painted sanitation department equipment were some of the gimmicks used in the Richmond, Va., campaign for a cleaner city.

611. Halloween will be Occasion for Reminders not to Litter. *Refuse Removal Journal*, 3:10:20, October 1960.

Litterbug costumes designed for wear by "trick-or-treat" youngsters will bring antilitter messages to homes all across the country.

612. Los Angeles' Latest Anti-Litter Idea. *The American City*, 75:8:31, August 1960.

As part of an antilitter campaign, the Los Angeles City Department of Parks has constructed an 8-foot-high replica of Parky, the Tidy Kangaroo, with a 30-gallon removable trash container in its pouch.

613. New Litter Baskets Spark Clean-up. *Street Engineering*, 5:2:13, February 1960.

Steel-mesh litter baskets will soon supplement presently used, push-lid receptacles in Los Angeles, Calif.

614. New Trash Baskets in Philadelphia. *The American City*, 75:10:25, October 1960.

The city of Philadelphia is experimenting with the use of colorful wire trash baskets, attached to lamp-posts between intersections, in an attempt to reduce the litter problem.

615. One, Small District Covers Lot of Ground. *Sweep*, 2:1:10, Spring 1960.

Describes some of the unique sanitation problems in New York City's District No. 1. The district's uniqueness is the result of its location and the famous buildings and thoroughfares within its boundaries.

616. The People Took Charge of This Cleanup Drive. *The Street Cleaner*, 45:10:1, October 1961.

A short account of the recent cleanup campaign by citizens in Perrysburg Heights, Ohio.

617. Private Collection Gets Test on State Highways. *Refuse Removal Journal*, 4:7:10, July 1961.

The State of Massachusetts is testing the employment of private contractors for the collection and disposal of trash and litter along heavily traveled vacation routes.

618. The Public Judges Litter Receptacles. *The American City*, 75:3:33, March 1960.

Los Angeles, Calif., residents were asked to select the litter receptacles during an antilitter campaign in which eight different kinds of receptacles were placed at selected locations. An open, steel-mesh basket was selected from the group.

619. Tin Can Clean-Up in the Sierra. *Sunset*, 126:3:58, March 1961.

A brief account of campaigns to clean up cans and to remove trash and other refuse in the High Sierras, and steps which each individual can follow to improve the litter problem.

Bubier, R. H.

620. A Mechanical Seaweed Rake. *The American City*, 75:7:109, July 1960.

Describes a new machine developed by the city of Fort Lauderdale, Fla., to clean its beaches of seaweed. A bulldozer, with a mechanical rake mounted on the front and a conveyor belt attached to the side, loads the seaweed into a trailer being pulled by the dozer.

Covert, L. W.

621. We Modified a Rock Picker. *The American City*, 75:4:115, April 1960.

By adding a fine-mesh shaker screen to a rock picker and a 2-to-1 reduction gear to the power takeoff of a tractor, Newport Beach, Calif., has built a machine for cleaning broken bottles, cans, paper, and other rubbish from its beach.

Cox, E. Dale

622. Litter Control for Monterey County. *California Vector Views*, 7:9:53, September 1960.

A detailed account of a new litter control program inaugurated by Monterey County, Calif. The program, which has resulted in a cleaner county, consists of three parts: (1) strict enforcement of the litter laws by a litter control officer; (2) education directed against littering through speeches, recordings, decals, posters, and several other devices; and (3) roadside cleanups by convicted litterbugs, Boy Scouts, community service organizations, and prisoners.

Gill, Jack

623. Albuquerque Collects 1,500 Tons of Trash During "Clean-Up, Paint-Up, Fix-Up" Campaign. *Western City*, 37:6:37, June 1961.

A report on the Albuquerque, N. Mex., month-long cleanup campaign, which resulted in 1,500 tons of collected trash and a general improvement in the city's appearance. The unique feature of the campaign was the cooperation of the local merchants in selling cleanup supplies at a discount to the participants.

Graves, Frank X., Jr.

624. A Thorough Clean-Up Campaign. *The American City*, 76:6:115, June 1961.

A brief description of the ward-by-ward and street-by-street cleanup campaign in Paterson, N.J., after one of the most severe winters in its history.

Johnson, Worth

625. We Use a Hay-Rake. *The American City*, 75:3:188, March 1960.

Long Beach, Calif., is using a hay rake to clean refuse from its 392 acres of beach. Gives details of the modification of the hay rake for this use, and describes the cleaning operations for winter and summer.

Phelps, J. Grady

626. "Operation Cleanup" Yields 4,700 Tons of Waste. *Public Works*, 92:11:99, November 1961.

An account of the organization of and disposal methods used in a recent Miami, Fla., cleanup campaign. The special collection, netting 4,714 tons of refuse, was combined with the regular weekly refuse collection and served as both a sanitary and fire prevention measure.

Wichman, William C.

627. How Cincinnati Educates Against Street Litter. *Street Engineering*, 5:4:26, April 1960.

Describes activities of Cincinnati's antilitter program. Includes the appointment of a supervisor, two deputies, and 50 foremen; door-to-door campaigns; antilitter signs and posters; the distribution of paper litter bags; and strict enforcement of litter laws.

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service BDP & EC—Solid Wastes Program

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